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Agriculture is the nursing mother of the Arts.—*Xenophon.*

Tillage and Pasturage are the two breasts of the State.—*Sully.*

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ON CLOVER CULTURE.

BY EDMUND RUFFIN.

Clover is now generally and properly considered as one of the valuable field crops of many farmers. It is generally understood that the improvement of land and of grain crops, as well as other important profits, would be very imperfectly pursued, without the aid of clover culture. Yet the power of land in lower Virginia to produce red clover to advantage, in field culture, has been but a recent creation and discovery. Thirty years ago, the production of clover in this region was confined to a few farms of the best natural soils, and on them, to small and very fertile spaces. A few acres of clover, to supply early green food, and rarely some bad hay, was the most that was obtained anywhere, except on soils of the highest natural fertility, on which only gypsum would act. If elsewhere sown over a whole field, (on the young wheat,) as many persons did, perhaps once or twice only, the growth was generally so small, sparse and feeble, and so soon was it killed by stronger natural weeds, that such efforts were almost always unprofitable; and the general production of clover, as part of a regular rotation of crops, was soon deemed hopeless.

My own early attempts to grow clover were continued for some years and extended over all except the very poor land of my farm.—But few plants lived through a year, and fewer attained more than dwarfish size. And the only small exceptions of comparative good success, were on highly enriched lots, which, besides other manuring ingredients, certainly possessed (like all other best soils,) much more lime than the ordinary proportion in our lands. It was after having abandoned as hopeless all attempts for extended clover culture, that I began to make my fields calcareous by the use of marl. And when the marled land had produced its first crop of wheat, and was left to rest under its after growth of natural weeds, clover of vigorous growth and good size showed sparsely the next year, and in some places stood thick enough to be mown for hay—the first such product I had ever obtained. This new and then unexpected and remarkable growth, sprang either from dormant seeds of the ineffectual early sowing—or otherwise from the seeds produced on the few plants which grew, and which were so diminutive and so soon dead, as not to have attracted my notice as exceptions to the supposed general and speedy failure. The observation of the later results, after marling, served to indicate the true cause of the previous and general failures of clover culture, and the means by which that culture could be made productive.

The sowing clover seed throughout my fields was then resumed, and the results, after marling, were as generally successful as before they had been the reverse. The before generally and well understood fact that clover could not be raised to any profit in lower Virginia, had been ascribed to the heat and severe droughts of the summer months, and to the general excess of sand in the soil. These certainly are strong obstacles, which now, as then, still oppose general success. But it is now clear that the former general and insuperable obstacle was the almost universal and great deficiency of lime in the land. Wherever that defect has since been removed, by sufficient liming or marling, it is found that clover will grow well, if under other favorable circumstances of soil and season. We still frequently fail in the crop, because of too sandy soil and dry seasons. But though a precarious product, the growth is naturalized on every soil made calcareous; and the crop, if scanty, on poor lands, is yet hardy and tenacious of life, as if indigenous. Further—in many, if not in most cases, after full marling or liming, our soils which before had been incapable of receiving any benefit from gypsum, then become susceptible of this mysterious and important influence, and by which the product of clover is so greatly increased.

In seeding clover, it is necessary to choose a time, and state of circumstances, when its young and feeble growth will be the least obstructed by other and more vigorous plants. The usual and best condition of land is when it has been sown in wheat (or oats) following either corn, or some other cleansing crop.—The young wheat then has almost exclusive possession of the land; and the young clover sown in winter or early spring, is rather protected than injured by the over-shadowing wheat. When, however, the land is very rich and the wheat very rank in growth, its too dense shade is apt to smother and entirely de-

stroy the young clover, as all other young plants.

Clover seed may be sown on the first or any later snow. But I prefer a time and condition of things which usually occurs some time in February or early in March. This is when, after the ground has been frozen, it thaws and dries, and by its contraction opens in numerous little superficial fissures or cracks. Then the sowing should be pushed on as rapidly as possible, as the first rain will destroy this favorable state of the soil. If the seed is then sown, a large proportion will fall into the cracks and be covered by the first expansion of the soil. The safety of the young sprouts from frosts, and from drying winds and sun, is thus much better secured, than when the seeds are left (as usual) lying on the surface of the earth. But it is still better for securing a good "stand," and the living of the young clover, that the ground shall be lightly harrowed before the sowing of the seed, and still better if it is rolled immediately after. But it is not often that much of a wheat field in February, or even in March, is dry enough for safe harrowing or rolling—even if there is spare force and time for either or both of these operations.

The sowing of clover seed over all the land required, is a tedious business, if to be executed as usual, by casting the seed, and by good sowers only. There is not always to be found even one such competent sower on a farm—and rarely three or four. Moreover, great irregularities and defects in the sowing of clover seed cannot be known until after the plants are well up, and when too late to alter any wrong procedure, or supply deficiencies.—Again—every high wind obstructs and suspends the sowing; and in March, there are but few days in which the wind is not too strong. Thus, the whole available season is scarcely long enough for getting the seed on the land in the ordinary modes of sowing; and, as such slow work, by a small force, at different and uncertain times, cannot possibly have proper supervision, it will certainly be done both worse and more slowly than necessary. Of course, under such circumstances, there can be no waiting for the proper and best condition of the ground for receiving the seed, of which there is not often more than a few days' continuance, before rain comes to fill the cracks and settle the loose surface.

The mode which I have long pursued, and by which most of the usual difficulties are avoided, will now be described. Each sower is provided with an apron to hold the seed, one end of which is tied around the neck or waist, as found most convenient. The other end of the cloth is gathered up and held by the left hand, at suitable height. The same hand also holds the handle of a light paddle, of which the broad part may be about seven inches wide and eight or nine inches long. The heading of old flour barrels or broad shingles, offer suitable materials for these paddles. The sower holds the paddle in front of his breast, sloping outward and the upper end higher than the handle. With the right hand he takes up as much seed as can be held in the closed tips of the thumb and two fingers, without overrunning, and throws the seeds with some force against the paddle. Trial will soon direct the proper slope or angle at which it is best to hold the board; and when so held, the rebounding seeds will scatter very equally right and left and in front of the sower. As walking along the row, he dips up the seeds as one step is made, and throws them with the next one. If the board is only held in a proper and uniform position, and the seeds taken up as directed, and thrown with sufficient force, any totally inexperienced laborer can sow well, and indeed cannot avoid distributing the seeds equally.—I usually employ in sowing every hand not required for other service, including women and young ones. All who are able to walk with the best hands, keep in one party, and sow, walking abreast, or side by side along the rows. If there are young or less able hands who could not keep up with the others, they may be kept in a separate gang, with one careful old hand to watch and direct them.

To regulate the quantity of seed according to the land and its condition, a certain number of sowers are required to sow a marked width. If the wheat field is in ridges or beds, whether broad or narrow, each sower may carry about five or five and a half feet of width. One or the other of these widths is usual for corn rows; and either the same or some multiple of the width, is made a bed for wheat. My own beds are mostly either of twenty-five or twenty-seven and a half feet width. To seed such, about five sowers walk abreast on each bed. Men and women or smaller hands are placed alternately, so that their different quantities of seed may be averaged and equalized. As the seeds thrown by each sower scatter over a width of seven to ten feet, of course each row of seeding laps well on the two nearest rows. In this way, I think three quarts of seed enough to the acre, in ordinary cases, and serving to give a better and more equal seeding than four quarts sown in the usual manner of casting. And if the seeds sprout and live well, three quarts will be an abundant supply. For the general deficiencies of clover plants, at later time, is not so much for want of seeds, as because of their failure to sprout, or the plants being afterwards killed by freezing or drought.

In this mode the whole seeding may be finished in two or three days at most, and be properly superintended. The overseer walking at one end of the row of sowers and looking along their line of boards, can readily see any important defect of careless hands. Having in view this rapid operation, there is no need of hurrying the commencement, or sowing when the land is not in good condition, for fear of being too late. The proper loose and cracked condition of the wheat field will be sure to occur some time late in February or in March. Then sow as quickly as possible, for

fear of rain occurring to destroy this most favorable condition. If nothing is done to cover the seeds, it will be done tolerably well by the rains alone, on a surface so fissured and open. But it will be much better and go as far as is possible to insure success, if the land can be lightly harrowed before seeding, and rolled afterwards. A wooden roller, set thickly with pegs, and not too heavy for its object, will serve much better than a smooth roller for this purpose. When there is no time for either of these slower operations, bush-harrowing on dry and light soils, will be the next best mode of covering. By tying enough of any thick branching rigid boughs, (as hawthorn, willow-oak, &c.) along a pole, a rough broom may be made which will sweep and lightly scratch a breadth of eighteen or twenty feet—and yet be light enough to be drawn by one mule.

So far as time and force will allow, rolling the land after sowing is preferable to the bush-harrowing. Rolling not only covers the seeds, but by compressing the loose surface soil, is a benefit to the growth of both the wheat and the clover.

Still better will it be if light harrows can precede the sowing and rolling. I have used for this purpose square harrows, with twenty or twenty-five straight teeth (or "tines") sweeping five feet, and light enough to be drawn by one horse or mule. But having none of this kind recently, I have used like harrows, too heavy for one mule, but a very light draught for two. The points of the teeth should be somewhat worn by previous use. I have not found the running of such harrows materially injurious to wheat on dry land, by tearing up the plants; and when followed quickly by the roller, it can scarcely be otherwise than beneficial.

If the clover seeds are sown ahead of the harrow, they slide off of all the little eminences, and are collected in the hollows. This is one of the usual and general and worst causes of unequal distribution and waste of seed. The light harrow, if following this seeding, will scratch through the eminences where there are no seeds, and seldom touch the depressions, where most of the seeds are clustered. But when the harrowing precedes, the seeds are stopped by and in the scratches, and are as apt to remain on the higher as the lower spots.—The subsequent settling of the loosened earth covers nearly all the seeds, even without rolling. But rolling in addition, wherever it can be done, adds greatly to the perfection of the whole operation.

There is another advantage in the seeding being after instead of before the harrow, if on flush ploughed land. Each row of the harrow may leave a very narrow, but perceptible interval between it and the preceding row. Six or ten inches width thus omitted will be no objection. Then every row may be easily distinguished, and will serve as rows for the sowers to walk on. This is an important aid, when there is no bedding to furnish marks for the sowing.

After the wheat crop has been removed from the field, it is advisable to bring on cattle and other live stock, not only to eat the remaining wheat, but also for the benefit of the young clover. The land is then too open and puffy to suit clover, which demands a close compact soil. The trampling of animals is in this respect beneficial—and much more so than enough to counterbalance the injury to the clover which their grazing must cause, if considered alone. Still the grazing should be as little as will give sufficient trampling—and the access of stock should not be permitted when the ground is wet.

Perhaps a further benefit from cattle being on young clover, is caused by their treading down the weeds, and preventing so much shading of the clover. Too much shade to clover in summer is very injurious. I have seen it killed entirely, in spots, by a covering of straw applied after harvest, and so light, that the straw was held up off the ground by weeds. Also I have heard from General Corbin Braxton, that he has maintained a manifest better stand and growth of clover by mowing the growth of weeds, (mostly carrot weed, or "rag weed,") which always succeeds our wheat, and soon overtops the young clover. The removal of the shade must be the cause of the undoubted benefit to the clover.

The most economical and profitable application of putrescent manures (of stables and stock pens,) is to clover, in March and April, in the year succeeding that of the seeding.—But as that mode of applying manure has been before treated of in a distinct article,* but a few words will here be added on that head. All spots of clover thickly standing on poor ground, and where but a mean crop may be expected, should certainly be top-dressed in the manner referred to. Thus, with favorable season, a mean and almost worthless growth may be made heavy enough to be a good green manuring for the next succeeding grain crop. When good land and clover are so top-dressed, the subsequent mowing of the crop is not prevented, nor much impeded by the manure having been applied. Indeed in the two or three months following the application, the manure will have been mostly converted to clover, and the remnant of undecomposed manure will lie so close to the ground as to be but little in the way of the scythe. It is proper however to leave the stubble higher where manure had been applied.

Many farmers, who properly deem their clover a manure crop, object to mowing and removing any portion of it, as being an improper abstraction of fertility from the land. So different are my views, that I would wish every acre of clover to be mowed once, if time and force permit, and if the product would pay for the labor.

*Republished in American Farmer, vol. 1, p. 70.

Clover, in common with all other plants of the leguminous tribe or pod bearing family, draws less support from the soil, and more from the atmosphere, in proportion to the feeding or manuring value of the product, than any other family of plants. The peculiar value of clover as a manuring crop has long been known, and made use of in practice. The like value of the native pea (or more correctly bean,) of the Southern States is scarcely less than of clover. Such have been the inferences of practical farmers, from experienced effects only. But scientific investigations have more lately thrown light on the subject. In this article, designed exclusively for practical application, it would be improper to make more than slight reference to these very interesting scientific researches. It has been found that in clover stems, leaves and roots, and in the stems and leaves of peas and beans, and more especially their seeds, there is more azote than in other plants. Boussingault found that plants of the leguminous tribe, red clover and peas, absorbed azote from the atmosphere, and which could not be done by plants of the cereal or grain bearing tribe. Azote, though much the smallest ingredient of the elements of organic matter, is incomparably the richest; and its presence and quantity constitute the greatest alimentary value of plants, for food or manure. The cereal plants can obtain their necessary supply of azote from the soil only. The leguminous plants can as well profit by all the azote supplied by the soil and inorganic manures, but also can draw this richest aliment from the atmosphere, where the quantity is unlimited, and the supply only limited by the power of plants to absorb and use it in this separate and pure form.

It has further been understood by scientific investigators, that plants in general take up but little nutriment from the soil before they form their seeds. Previous to that time, water and the atmosphere have mainly supplied the nutriment necessary for their growth. Upon these grounds, if clover is mown for green food or hay (for consumption on the farm,) before the seeds are fully formed, there has been but little abstracted from the soil; and the use of the removed clover as both food and material for manure, must be of more value than as a manure only, if left standing on the land. If the mowing is later, for hay, and when some few of the seeds are matured, though more will then have been abstracted from the soil, still the product remains to the farm. The earliest profit, from the food, goes to the farmer, in the labor or the fattening of animals. The manure so produced, though less in quantity and value than if the clover had been left to die and fall on the field, is not as much lessened, as the amount of the other important values derived from mown clover.

But there are other important advantages of mowing the first growth of clover. It is ready for the scythe, for green food in May, and fit for hay early in June. During that time, all the weeds which damage the wheat crop by the admixture of seeds, are then in growth, too far advanced to again produce seeds, and then too green for their seeds to germinate. The clover field is more or less set with these weeds; cockle, darnel, cheat, and wild garlic; and sometimes rye and oats, if these crops were grown on the farm—the seeds of all which had been left on the ground when last under wheat. All these annuals are effectually destroyed by mowing the land for clover. Even the wild garlic, though the root is not hurt, has its abundant seeds above ground destroyed, and for that year, its injurious effects much limited. Further, by removing the first growth of clover before its seeding, the second crop springs quicker, and grows better. If designed to supply seed, the product is better, and more easy to harvest. If to be ploughed under in August or September, to prepare for wheat, the ploughing will be much easier, and more effectual, than if the dead first growth had remained.

The mowing of clover for green food should be begun as soon as the growth is high enough to furnish a good swath. In Europe (as Boussingault states and seems to approve) the mowing for hay is begun before the crop is fully in flower. In this manner, they obtain two mowings for feeding or hay, and a third growth, as well advanced, for ploughing under, or leaving on the land as manure. But it is difficult and hazardous to make hay of such immature clover, and the product is small in quantity, and, it is supposed, also inferior in quality as food. The best time for mowing for hay is when about one-fourth of the blossoms have begun to turn brownish. But if the crop is too large for the force, of course there must be some mowing both earlier and later than the most proper time.

Clover hay has been generally deemed of very inferior quality. It has even been declared by many farmers, and in some publications, to be unfit for horses, and admissible only among the coarse articles of food for wintering store cattle. If these opinions were confined to clover hay made (as has been most

general) by turning and exposing to the sun, I should not care to dispute them. In that mode, the thin leaves are all crisped, and crumble to powder, before the large stems have lost their water and greenness. The cocks cannot exclude rain. And when the hay is dry enough to be stacked, or housed, it often has nothing left but the stems, and they as black and brittle as ripe and dead weeds.

So great were the supposed and ordinary difficulties of making clover hay, and so rarely was it obtained of good quality, by all the care that could be used, that the late Fielding Lewis, (then one of the best farmers in lower Virginia, and especially noted for applying abundant (if not too much) care and labor to every object,) after full trial, abandoned all attempts to make good clover hay—and resorted, instead, to a slovenly mode, entirely different from his general careful habits. He threw three or four swaths into a "wind-row" or light high ridge of partly withered grass, and so let it lie, until dry enough to stack—if rain did not previously destroy all its value. (*Farmers' Register, vol. I. p.* 23.)

The mode which I have adopted is upon the principle of curing the grass in the shade, and by air instead of sun—and of never moving the clover after its leaves are dry or crisp, (if they become so at all,) until it is carried to the house or stack. There is less labor, less danger of damage from rain, and more value in the product, than in any other process of which I have heard the manner and results. It is proper to say that the plan is not original with me. The attempt to cure hay in cocks (and of course mostly in the shade,) has often been made—and successfully, when high winds and heavy rains did not damage the cocks. The plan of preserving their upright position by stakes or skewers was first suggested and used by the late Claiborne W. Gooch, who wrote a communication embracing this contrivance, for the Farmers' Register, (vol. i. p. 164.) The plan was improved upon, and the practice reported to the same publication, (vol. x. p. 414,) at my request, by a very young farmer, who, since, with myself, and others seeing our practice, have successfully cured clover in this manner. Without further reference to others' practice or opinions, or noting differences, I will proceed to describe my own present preferred practice, as improved by the experience of this plan, in the whole clover harvests of the last seven years.

When the clover is nearly or quite in the best state for mowing, for hay, (that is, when about one-fourth of the heads are turning brownish,) that operation is begun, after dinner, or about two o'clock, P. M. When cut so late in the day, no other labors will be necessary. The grass is left in the swath, as cut, until the next forenoon, when the dew has dried off. If clear of dew when mown, there will be none except on the mere surface of the swaths. When quite free from dew, and also when some few of the upper leaves have become crisp, under the effect of sunshine, then it is time to begin the first fork-work. Other hands, (if the mowers are then employed,) with iron-prong forks, begin with the oldest mowing, and throw the swaths into small heaps, without any care for their shape, and each merely large enough to supply at least one good fork-full. These heaps might be put immediately into cocks, if required by approach of night, or threatening of rain.—But otherwise, they will best be kept until the forks have gone over all the grass that is partly wilted by exposure in the swath. The making of these heaps is a facility for the subsequent cocking, and, therefore, is no addition to that labor. But after being thrown into these heaps, it is best to let the grass so lie a while, for two reasons. First, a new surface being then exposed to the sun, more wilting of the greener clover will take place, and less water (in the sap) will go into the cock, without danger of hurt by too much drying in the sun. Secondly, this heaping is a very easy and rapid operation, and so serves quickly to place out of danger the grass beginning to be crisp on the surface of the swaths.

After the heaping, (or an hour or two after beginning to heap, if different sets of hands are employed,) the cock-building is begun. The clover usually is then throughout the heap more or less wilted, or "fallen," but still full of sap, or juices, except the very few leaves crisped before the heaping. Stakes or skewers should have been previously prepared, and brought on the ground. These are either of rived timber, or otherwise cut of any tolerably straight sapling wood, though young pines of second growth, where standing thick, furnish much the best. They may be from five to six feet long, and one and a half to two inches through at the large, and one inch, or less, at the small end. Both ends should be sharpened by a hatchet. A pin, made of strong and tough wood, pointed, and rather larger than the large point of the stakes, is driven into the ground about eight inches deep, to make a hole to set the stake, and which is so placed firmly and upright. The stakes are so placed in rows, and at such distances as trial will show is required for the cocks. The cock-builders now begin, by placing a heap of the grass around the bottom of each standing stake, and closely and evenly around. This, and enough to make the base, should not be more than fifteen or seventeen inches from the central stake to the outsides. Other clover is placed on this base, either with the hands and around the stake, or with the fork, putting the clover loosely on the pointed top of the stake, and forcing it downward to its place. The thickness of the cock may be a little enlarged when twelve or fifteen inches above the ground. But it is best not to permit any to be more than three and a half or at most four feet across the middle. The main object of the stake is to prevent the cock falling, or being blown over by high winds. With this

support, the cocks may be raised at first to six or seven feet high. They will afterwards settle considerably—and the more in proportion to the succulence of the clover, and the lightness with which it was laid on in the cocks. Moderately pressing down the grass when building the cock is proper, to avoid too much settling. But the cock should not be made too compact at first, so as to exclude the entrance of air, and so prevent the proper curing of the grass. A little experience will show the improper extremes to be avoided.

As the cock settles, the grass holds more or less to the stake, and especially to the rough bark of pine. This causes almost every stem to droop from the centre to the circumference of the cock—and so to shed rain which would otherwise penetrate the very open texture of clover cocks. The manner of settling gives a pointed top to the cock, even if made broad-topped at first. The pointed upper end of the stake usually permits the top of the clover to settle below the point. But sometimes the upper clover is held up by the stake, like a hood over the lower and main part. The outside of the cock shelters all the interior from the sun entirely, and more or less from the rain. Of course the mere outside is spoilt, by over-drying in the sun—or is like ordinary sunned and turned clover hay. But all the interior usually cures perfectly, the leaves remaining on the stems, and mostly preserving their green color, and many of the flowers their red tints. Heavy showers and transient rains, during the curing, will not prevent this result, or to but small extent. Very heavy rains driven by strong winds, or long continued spells of rain, certainly will be injurious; but to much less extent than even moderate and transient rains with any other mode of curing. I have had very bad weather in some of my clover hay harvests; but though both labor was thereby increased and hay somewhat damaged, I have never lost, by bad weather, altogether, a ton of hay, in this mode of curing.

According to the weather, and condition of the grass, the cocks will usually have to stand from four to seven days. I have in one case housed the hay (avoiding close packing) on the second day; and once, when the clover was cut too green, and the cocks built too compactly, and too large, they stood eight days, and then had to be opened, to remove some internal dampness, which had caused mouldiness in the middle. This was the only case of such error and its injurious effect. In ordinary cases, and with only ordinary rains, nothing is required after cocking, until the hay is fit to be housed.

When the first cured hay is fit to be housed, or stacked, the removal of the cocks ought to be begun early in the morning, while the hay is pliant, (or "gives," or is "in case,") from the effect of the damp night air. A moderate dew still remaining on the cocks, is no objection to proceeding. But any greater degree of wetness, from recent rain, I would not risk, if the hay had to be immedately packed closely, and in large bulks. After beginning, the carting in of the cured hay, and storing it, should proceed as fast as possible, while the hay continues pliant. But as soon as it begins to be rigid and crumbly from increased drying by the sun and dry air, the hauling should be suspended, until the next morning.

Preceding the loading of the carts, for half an hour or an hour, (according to the weather,) the loaders pull out the stakes, and then turn over the cocks, nearly upside down, but leaving the old bottom somewhat facing the sun. This part will usually be a little damp, from contact with the ground—(though not always, if cocked on dry ground,) and this, or any other remaining dampness, will be speedily removed by this little exposure to sun and air. The cocks must not be so exposed longer than necessary, before being carted in; and should be housed or stacked as soon as possible afterwards. Hay so cured will be inviting in color and odor, will be eagerly preferred by horses and mules to the best corn-fodder, or other hay cured in the ordinary manner. And if it is in any respect less valuable as food, no evidence of the fact has come under my observation. Green clover, or clover hay, is my only long forage for some months of every year, and is used without stint as long as it lasts.

For fear of rain, the hay ought not to remain in the cocks longer than it is cured enough for housing. But on more than one occasion, part of my hay was still in cocks, and not cured enough to house, when wheat-harvest was begun, and which occupied all the force for more than two weeks. After this long exposure the cocks were hauled in; and though there was more depth of sun-burning and injury thereby than usual, the interior hay was still excellent—and the whole together, averaged, was tolerably good hay—and preferable to most of the meadow hay sold in the towns.

Stacks or ricks of clover hay are troublesome to build and to secure from rain. They should be well trodden, while building, for compression, and to prevent more than the unavoidable settling; and should be topped with straw, to keep out rain. Putting clover in houses is very far the cheaper and safer plan.

The stakes should be brought to the barn-yard with the loads of hay, and placed under shelter. If so taken care of, they will serve for many years.

It should have been stated earlier that clover ought not to be cut for hay while any dew remains on it—though a very little remaining will dry off the clover after being cut, and as lying in the swath. This rule will delay the mowing generally to from 9 to 11 o'clock, A. M. All the clover cut each day before about 2 P. M. may be cocked that evening. All cut after that time may remain in the swath until next day. If the grass is wetted thoroughly

by rain in the swath, and before being wilted, there will be no loss, except of labor in opening and stirring the grass, which will then be required to dry it. As soon as this accidental moisture is entirely removed, the heaping and cocking should proceed, as in other cases.

The slight moisture from dew just before and to twilight, need not suspend either the mowing, or the putting of grass before heaped into cocks. But I would prefer not to make heaps from the swath after dew was perceptible on the clover.

The clover after being cut, usually lies in the swath, under from three to five hours of sunshine, and in the heaps, an hour or two longer. And all cut after two P. M. usually lies in the swath until next morning, and until the dew has dried off. But when there has been danger of a spell of rain, or on the evening preceding a Sunday, I have cocked, (and cured safely,) all the clover cut before four P. M. and within two hours after the mowing. In such cases, the cocks should be smaller than usual, and the fresh-mown clover laid on more lightly, than directed above for the ordinary procedure.

The great value and most important use of clover is as a green manure, and especially for wheat. For this purpose the land on which the clover grew, should be ploughed as deeply and as well as the soil and its then condition permit, and as early as may be after the end of July. If done much earlier, the second crop of clover will not have reached its full value as manure—and also the early ploughing will become very foul with grass. If the ploughing is much later, the crop of wheat will usually be lessened in proportion to the delay. This, however, is not always the result.

It is the general usage of those who precede wheat by clover to plough under the clover in its first year of full growth—(that is, the second year after sowing the seed.) Such was my own entire practice until recently, induced by the common belief that clover will generally die after attaining its full growth—and that, if left longer, weeds will be almost the only growth of the field in the next year. This is indeed the case where the soil is unfavorable to the growth of clover. But I have found latterly, that parts of my clover fields left unploughed through the second summer after full growth (or third summer after the sowing,) are equally as well, and in some cases better, covered by clover, than in the previous summer. The second year's growth is lower, but a thicker cover than that of the previous year. Many new plants spring in the before unoccupied spaces. And though clover is deemed a biennial plant, and as such should die after its second year from the germinating, still many plants live longer than this term. More especially, is this protraction of life induced by the mowing or grazing of clover just before it forms its seed.

If the continuance of the clover crop for two years can be relied on, (from previous trial and observations,) it is surely a great loss to plough it under a year earlier. If the usual one year's product is of great value as manure, two year's product should give twice as much manure. And as the great difficulty is to obtain a good "stand" of plants, it would seem the more required to maintain the continued manuring of a good stand already existing, rather than to try the risk of obtaining another from the seed, on other land.

Besides the manuring value of the clover above the ground, there is another large proportion in the roots. These are large, and penetrate the soil deeply, and all remain to manure the soil. Boussingault found, by careful trial of a certain space, (120 square yards) of an inferior growth of clover, that the roots alone made 1418 lbs. to the acre, when all the hay (two cuttings, as I infer from the context,) of that year made but 1810 lbs.—both products being dried completely. The quantity of clover roots contained 26 lbs. of azote; or about one-seventh the quantity of azote in the ordinary heavy manuring (27 four-horse wagon loads to the acre,) given to the field from stables and barn-yard, and after fermentation, which was 186 lbs. of azote.* An average year's product of hay, of his farm, Boussingault found to produce 78 lbs. of azote. Then the roots, in the above proportion, would have yielded 60 lbs. of azote—and the whole growth of clover, for one year, would yield 138 lbs.—or about three-fourths as much as the above named heavy cover of well fermented barn and stable manure.

The roots of plants cannot grow more than in proportion to the sizes of the plants above ground. Of course the roots of clover will not reach their full size and manuring value, if the crop is taken off, either by mowing or grazing, before being fully grown. From this, it may be inferred, that if clover is early and constantly grazed, so as never to attain much size, the roots will be as much dwarfed, and can give but little manure to the ground. But if the crop is allowed to reach full size, and is then mowed, or closely and speedily grazed off, the roots will have also reached full growth, and are competent both to send forth another good crop speedily, and to manure well the ground by their subsequent death and decay.

PASTURE LAND.

Every milch cow robs the land annually of as much phosphate of lime, (bone forming material,) as is contained in eighty pounds of bone dust. From this cause the Cheshire pastures became greatly deteriorated, but were restored to their former

* Boussingault's "Rural Economy, &c." Am. Ed. p. 355 and 362-3.

fertility by being well boned. Land continually depastured must be fed regularly with phosphates—by the application of bones, night soil, &c. Some descriptions of lime contain phosphates in sufficient quantity, but not all.

THE UPAS TREE.

We learn that a tree of this species has been brought from Java by Lieut. Marchand, of the Sloop of War St. Mary's, and has been presented to the National Institute, and is placed in the conservatory of that Institution at Washington. This is the tree, which, under the name of the "Bohon Upas" was formerly represented to possess such poisonous qualities that animals could not approach it, nor birds.

NORTHERN PRODUCTIONS IN VIRGINIA.

It is known to thousands that *hay* is brought from the North in bales to the capital of Virginia, and sold readily to our citizens. It is brought up James River to Lynchburg and sold at the *moderate* price of *one dollar per hundred pounds!* The same may be said of Norfolk, Charleston and New Orleans. Only think of it! hay brought from New York, and sold within less than one hundred and eighty miles of Washington county!!

Whilst our hills and valleys abound with lime stone, and our forest with wood rotting on the ground, it is known that *Lime* is brought from Thomaston, Maine, to Virginia, and sold within two hundred miles of Abingdon!

New York, in a great measure, supplies Virginia and other Southern States with apples every year; and Irish potatoes are brought from the same quarter and sold in Virginia at one dollar per bushel! Does not every article we use here come from the same direction—even to cutting our grass with Northern scythes and sweeping our houses with *Northern brooms!* Verily, this is "Northern aggression" sure enough.—*Abingdon Virginian.*

AGRICULTURE AT THE GOVERNMENT.

The President of the United States in his recent message recommended the establishment of an Agricultural Bureau in the Department of the Interior. The Secretary of that Department (Hon. A. H. H. Stuart) recommends it warmly. He also proposes the establishment of a model farm in connexion with the Bureau, and suggests the purchase of Mount Vernon for that purpose. He says at the close of his remarks on this head, "I would respectfully add that Mount Vernon, whose soil was once tilled by the hands and is now consecrated by the dust of the Father of his Country, should properly belong to the nation, and might with great propriety become, under its auspices, a model farm to illustrate the progress of that pursuit to which he was so much devoted." The Senate Committee have agreed upon a bill, the particulars of which we have not learned.

For the Southern Planter.

KENTUCKY BLUE GRASS.

In looking over the the March number of the Southern Planter, I was surprised to see, under the signature of "Hampton," that the Kentucky blue grass (or, as some call it, the English blue grass) had lost favor in Rockbridge county. I have been informed that large quantities of seed have been sold in Lynchburg within the last three years from that county. I think Mr. "Hampton" must be mistaken in the kind of grass. It is extensively raised in our south-western counties; and I have been informed from a reliable source, that there are meadows now standing that were sown thirty years ago, which have improved every year, and now yield more hay than ever, without any aid except the manure dropped by young stock (such as mares and colts and calves,) which are supported during the Fall and Winter by the blue grass meadows, except when the ground is covered with snow.

I have a lot of blue grass which will be two years old next Fall. I was forced to graze it last Spring until I hauled in my wheat, which I stacked in a corner of the lot. Nothing went upon the lot until the tenth of November, by which time the grass had gotten up nearly knee high and had lodged. The blades of grass were from ten to eighteen inches in length, and a richer, nicer looking pasture I never saw before. A neighbor of mine had a northern hill-side near his house which he had not reclaimed, on which he seeded blue grass about the time he was seeding wheat. As soon as it was seeded, he hauled and sprinkled wheat straw over it very evenly. In less than a year I was requested to look at it, and a thicker, nicer sod I never before saw in the same length of time.

I regard it as being well adapted to the red stiff lands of Eastern Virginia. I failed to get it to take on sandy, flat land, but have reseeded again this Spring. I prefer mixing timothy, blue grass and clover. The clover gives way, and there is a long struggle between the remaining two, but I am assured that the blue grass finally gains the ascendancy, and the older it gets the better it is. It certainly grows later in the Fall, and puts up earlier in the Spring, than any grass I have tried. I

have felt myself bound to speak in favor of this grass; for grass, and grass alone, will be the salvation of Eastern Virginia. If every farmer will only sow ten acres, as I have above stated, he will at this season of the year have rich milk and yellow butter, when his neighbors, who stick to rotten shucks and straw, will have but little poor milk, and the whitest and meanest of butter.

I. I. HITE.

Buffalo Springs, Va. April 17th, 1851.

For the Southern Planter.

CONTENTMENT *Vs.* RESTLESSNESS.

There is an old saying, viz: That there is luck in leisure. If there is, I really think a neighbor of mine will get a full benefit this season. Mr. B. R. who is a planter and farmer, has not yet burned his plant beds; nor has he ploughed a furrow for corn. He says that it is time enough, that he will burn a plant bed the first of next month. His employment is, to feed ten head of hogs, one horse and one cow, every day, which he says, keeps him so busily employed, that he has no time for anything else. This man seems, to be the best contented and the happiest man I ever saw. In passing by his house, I can not but compare his perfect content, with the restless farmer and planter whose corn is in the cold earth, and whose tobacco plants are being consumed by bugs, &c. The mountains of this region are white with snow. The weather has been bad for several days, and there is every prospect of cold weather. Our fruit is in a fair way to be lost. The prospect for wheat has improved very much. Clover and grass are more common than they were three years ago, and are quite forward for the season. There are a few (but they are really few and far between,) good prospects for hay. Large quantities of Northern hay is now being sold in Lynchburg, is this not a reflection on old Virginia? I know, (judging from what I make every year,) that as good hay can be made in Eastern Virginia, as in any part of the North.

I hope the recent agricultural move in Richmond, may be of lasting benefit to Virginia. We want aid and encouragement from our Legislature; and we want a competent chemist to analyze our soil; and to give public lectures, which would cause agricultural societies to be formed; and more good would be done in this way, than in any other. I think Eastern Virginia will continue to improve from this forward. In ten years from now, I predict that the product will be double, and perhaps it will be three times what it now is. The people of this region seem to be more industrious and managing than they ever were. Many are making clover lots; this is a good commencement. They will get a taste, and I hope and think, their appetite will increase for *clover* and *grass*, as it has heretofore done for whiskey. If all the money that has been spent in spirits within the past fifty years had been spent in clover and plaster, Amherst would now be one of the richest counties in the State.

A SUESCRIBER.

April 16th, 1851.

REMEDY FOR BOTTS.

Those who have horses troubled with botts, will find the following a very good remedy: Take half a pint of molasses and one pint of new milk, which put in a bottle and shake well together—drench with this. Then dissolve a quarter of a pound of alum in warm water, and in fifteen minutes give this. Physic should be given after this.—*Genesee Farmer.*

DISEASE OF THE MORELLO CHERRY TREE.

BY Y. TAYLOR, OF LOUDOUN.

The Morello cherry tree is subject to a disease that is now beginning to make its appearance in this section of country.—This disease has prevailed for a number of years in Eastern Pennsylvania, until nearly or quite all of the trees of this kind, have been destroyed; and it has been advancing South regularly, until it has now reached the southside of the Potomac river. It is to be seen in Loudoun, Clarke and Frederick counties, and perhaps in other counties also. It is supposed to be the effect of an insect, and shows itself by dark excrescences, or an enlargement of the smaller branches of the tree, resembling knotty tubercles, that ultimately cause the death of the twig; and thus when it becomes so numerous as to attack all the branches, the tree dies. The habits of the insect are not fully known, but it is believed that the eggs are deposited in the twig when the insect in its larvæ state feeds upon the juices of the tree, and thus causes the enlargement of the limb. On examining the enlarged branch, the excrement of the worm is visible, occupying the cavity where it had existed. This insect, most probably like other insects, exists in different places in different stages of its growth, and may pass a part of its time in the earth. Hence, unless we knew the period when the egg is deposited in the branch, and the insect in the larvæ state, we may not be able to determine precisely the proper time to apply a remedy. But this may be determined by careful ex-

amination whenever the disease makes its appearance. Let this be done. As soon as the worm is discovered and appears to be feeding on the inner part of the twig, then let every affected branch be cut off and committed to the flames, indiscriminately and certainly, for upon a faithful application of the remedy alone can a complete extirpation of the disease be expected. Should a tree be badly affected, it would be better to cut it down at once and commit it to the flames. Let this remedy be faithfully applied wherever and whenever the disease appears, and we may confidently predict that we may save the Morella cherry in this region. Now is the time when this disease is just making its appearance; if postponed a few years, it will require a much greater effort to effect the object. But this, or any other remedy to be effectual, must be universally applied. A few persons cannot do it; for of what avail will it be for one man to apply a remedy, if his neighbor refuses to do so, and permits the insect to increase on his trees, and thus keeps up a succession to prey upon his neighborhood?—*Winchester Republican.*

From the Genesee Farmer.

POTASH AS A FERTILIZER.

From our boyhood to the present time, we have noticed that soils which abounded in potash, as demonstrated by their producing large forest trees rich in this mineral—the accumulation of centuries—were always distinguished for their fertility. If there are any exceptions to this rule, where the land is properly cultivated and drained, they have escaped our observation. Taking a similar view of this interesting subject, M. Burger, a German author, gives the following table of the amount of ashes in one hundred parts of dry wood, and a few other products of the earth as found by him on analysis:

		Ashes.	Potash.
100 lbs.	Oak gave	1.350 lbs.	0.155 lbs.
"	Elm or Maple	2.400 "	0 390 "
"	Poplar	1.230 "	0.075 "
"	Box	0.584 "	0.145 "
"	Fir (Pine)	0.341 "	—— "
"	Vine	3.379 "	0.550 "
"	Fern	5.000 "	0.626 "
"	Maize Stalks	8.300 "	3 600 "
"	Wheat Straw	4.300 "	0.390 "
"	Oat Straw	5.600 "	0.870 "

By copying from Schwertz, Sprengel, Liebig, Will, Boussingault, and other continental analyses, researches of this kind might be indefinitely extended; but it is thought more useful to invite attention to the facts above stated than to multiply figures, the purport of which might not be fully seen by many readers. As 100 lbs. maple wood consume 2.4 lbs. of earthy minerals in which there are .39 lbs. of pure potash, it is obvious that, for every 1000 lbs. a tree of this kind or an elm adds to its solid weight, 3.9 lbs. of this alkali are extracted from the soil, to say nothing of the potash in its leaves and bark, which contain more ashes than the wood. Oak forests will grow on poorer land than elm and maple; for 1000 lbs. of its wood contain only .155 lbs. of this alkali. In 100 lbs. of fir (pine) the ash is only a third of a pound, and the potash too small for the chemist to state the amount. In 100 lbs. of the wood of the vine there is over a half pound of potash. The fruit of the vine is remarkable for the quantity of potash it contains. Fern is also rich in this element; but cornstalks and cobs are among the largest known consumers of this alkali.—We are, however, inclined to suspect some typographical error in the figures that indicate the existence of over three and a half pounds of potash in one hundred of cornstalks. They have a large amount of silica (flint) in their hard, glassy stems, which is rendered soluble in water before it enters their roots by combining with a still larger quantity of potash. But all this alkali does not remain in the plant, for most of the soluble silicates of potash are finally left as insoluble salts in and near the cuticle.

Corn plants are large consumers of incombustible minerals, and all their stalks, cobs and seeds should be husbanded with care as manure. Straw, hay, pea vines, and even forest leaves are less appreciated as fertilizers than they deserve. Leached ashes composted with rotting constalks, straw, or other manure are much improved by the action of carbonic acid and ammonia on their insoluble salts. These are decomposed and rendered available at once, as food for plants. To show the importance of husbanding potash as a fertilizer, it is sufficient to state that a good soil rarely contains more than one part in 1000, while poor soils often have less than one in 10,000. A sample taken from near the Ohio river, "distinguished for extraordinary fertility," gave Dr. Sprengel only twelve parts of potash, combined mostly with silica in an insoluble condition in 10,000.

In the "Geological Survey of Canada—Report of Progress for the year 1849-50," we find several analyses of soils, which are full of interest. A sample from "the fine alluvial flats on the Grand river, below Brantford, which, owing to their richness, are scarcely adapted to wheat," gave the following results:

Alumina	2,090
Oxyde of Iron	2,529
Lime	310
Magnesia	456
Potash	105
Soda	060
Phosphoric Acid	380
Sulphuric Acid	008
Soluble Acid	006

It will be seen that 100,000 parts of this soil gave only six of soluble silica. The insoluble silica and organic matter are not estimated. In this exceedingly rich bottom, there is but a small fraction more than one part of potash in 1000, and of sulphuric acid only eight parts in 100,000.

As soda in common salt is much cheaper than potash, it is highly desirable to determine by careful experiments how far the former alkali can serve as a substitute for the latter in the growth of potatoes, wheat, corn and grass. One-half of the ash obtained in burning potatoes is potash; and about a third of that of wheat is the same mineral. By mixing slaked lime and salt together in loam or manure, salt is decomposed, its soda is converted into a carbonate and the lime into a chloride. If this soda can act as a substitute of potash in the organization of cultivated plants, the fact is of vast economical importance in husbandry. To our mind, nothing is plainer than the necessity of an experimental farm, to develop new truths in practical and scientific agriculture.

From the Genesee Farmer.

IMPROVEMENT OF FARMERS AND FARMING.

Having by observation and reading noticed the many improvements which are constantly being made in farms, farming, and the tools we do it with, it seems to me that a man comes short of his duty, if by experience or any other means he has learned anything by which he can benefit his neighbors, if he withhold that information from them. When we consider how much the welfare and prosperity of our country depends upon the farming class of the community, and the little attention that is generally paid to this branch of business—when we consider that the produce of one acre of land may support a family, and how many families are falling in the rear with the use of fifty or even five hundred acres by poor management and bad calculation—it is time that we had something to wake us up to a sense of our interest. And, if we are annually squandering the use of three or four hundred acres by our ignorance of our business, let us either quit our business and try something else, or begin farming as we would any other trade—by first learning it.

In my opinion there is not one farm out of fifty, taking our country through, that is managed with that degree of skill and economy that is manifested in all other avocations in which we see our countrymen engaged. Now, why this disregard for this one branch of business—this branch which furnishes the very necessary articles of food and clothing for the one thousand millions? It seems to arise from the idea generally afloat that any one is capable of farming. Any one who can hold a plough, drive a team, or lay up fence, is considered duly qualified to manage a farm. Hence, how frequently we see young men at the age of twenty or twenty-five years commence this business, who never spent one year in actual service on a farm in their lives; consequently they know but little of the nature of the soils they are about to cultivate, whether they are best adapted to the growth of wheat or grass, whether they have been completely exhausted by continual cropping without the needful manure. He knows nothing of the requisite qualities of a good team, good cows, sheep, &c.—nothing of the kind of tools he wants, nor of the timber of which they should be composed, neither does he know the value of these articles.

Set a blacksmith at building a shop, or a doctor at making boots, or a lawyer at telling the truth, and you will see just about as much perfection in their business, as is exhibited in the face of our country by two-thirds of that class of people called farmers. Farming is a business that requires more judgment, more skill, and more experience than almost any other, by reason of its being so varied. Each successive day brings with it a change of business. A new leaf is turned over in the farmer's book every morning. Many are the ways and means of performing each part of this business, and after all there is but one right way. Now, where is the man that has the right way of doing each and every part that the year rolls before him? Nor is this all; the farmer is required to have at least five years of futurity in his mind's eye, in order that each succession of crops may replenish his pocket, and at the same time work an improvement in his farm, for if he allows his farm to run down, he himself is down. Now, number the men who have attained perfection in each and every part of this business, and you have numbered the farmers. All the rest need instruction.

Now, then, would it be advisable for all those who are not adepts at this to try something else, even if it would be more profitable for the present? I think not, for our places would not be supplied with others who would do as well as we are doing; but I think this would be the best plan—to do as well as we can, and learn to do better by attending the fairs and improving by the lessons we are constantly receiving of those who have the advantage of us in age or opportunities and are generous enough to impart their knowledge to their fellow creatures, through the press, thereby rendering themselves useful citizens, interesting others in that which is for the good of all.

JOHN WATSON.

East Java, N. Y., 1850.

THE BIRD GUANO.

On this point our best authority is Dr. Hamilton, late of Peru, who remarks as follows:

"The guanos were still to be seen in vast numbers on the Moro of Africa, during my first residence there in 1826, but not in such abundance as they were a few years prior to that period; for, during the war for independence, Africa was several times attacked both by sea and land, when the cannonading had the effect of scaring them from their haunts on the Moro. Since 1826, Africa has been much frequented by foreigners, some of whom fired at and otherwise annoyed the birds, which have now all but totally abandoned that part of the Peruvian coast. The guanos have hitherto existed on the coast of Peru in numbers which would appear incredible, except to those persons who have seen them. The greatest mass of guanos I ever saw was in 1846, at the Chincha Isles, which are only barren rocks in the Pacific ocean, off Pisco, and about one hundred miles south from Callao. I saw the birds through a glass from on board a vessel under easy sail, when the rock appeared to be a living mass; for the guanos seemed to be contending among themselves for a resting place.—They live on fish, and are expert fishers, for which they are beautifully formed by nature. Their bill is three or four inches long, according to the age or size of the bird, and it is about one inch broad at the extremity, much curved, and altogether well adapted for hooking up food, which rarely escapes. The quantity of guano manure accumulated on the Peruvian coast must be very great, and may be estimated thus:

Allowing the average number of these birds to be one million, which I consider is much within bounds, and that each bird has one ounce of droppings per day, we shall have not less than above thirty tons; and deducting one-half of the above supposed quantity for evaporation and other casualties, there will still be above fifteen tons of this valuable substance produced every day. From what has been observed as to the habits and numbers of the guano, their frequenting promontories, declivities, and insulated rock, it follows that their soil in certain localities must have accumulated to such an extent, as might induce those persons who may not have considered the subject, to expect that the guano is to be had in unlimited quantity, but for obvious reasons that must be a fallacious expectation."

From the Western Agriculturist.

CORN SOWED BROADCAST FOR FODDER.

I have thought that the result of an experiment I made some years ago in sowing corn broadcast for fodder, might have some interest. After completing my corn planting which was finished on the twelfth of May, I set my team to breaking up about three acres of ground, the most of which had never been cultivated. When it was ploughed, I divided it into different portions and sowed it in corn broadcast, at the rate of from two to six bushels per acre. One ploughed in with a small shovel plough, another harrowed and brushed in, and still another was brushed in only. That which was ploughed in, grew worst of all; that which was harrowed and brushed in, best of all. On the tenth of July I commenced cutting and feeding it to my stock, consisting of milk cows, hogs, and young cattle, all of which appeared to be fond of it.—About the middle of the month I confined my cows and a portion of my young cattle and hogs in a lot adjoining the growing corn. This was the only food they had until late in September, and so far as I was able to judge, they did equally as well and indeed I think better than those that had the range of an extensive blue grass pasture. The milk of my cows was abundant and rich as from any manner of feeding. That portion of the ground which was sowed with corn at the rate of three bushels to the acre, and which was harrowed

and brushed in, was, by far, the best, and in this I picked in three different places, an average, and in each spot measured a rod square, from which I cut and weighed the growing corn, and taking the mean of these weights, found that an acre produced the enormous quantity of forty tons of valuable food for stock. But this is not all—a portion of the ground first cut over was ploughed and re-sowed, and thus produced two crops and though this last was not weighed, I believe it was much the heaviest, as it was not cut till the last of September. I thus demonstrated that eighty tons per acre of green food could be produced in one season. Ten head of cattle and about twenty hogs were entirely fed on this corn for more than two months. The last of September I mowed the remainder and cured it as hay, which was fed to the stock during the fall and they eat it with avidity. It might be supposed that corn sowed in this manner would produce no ears, but this is not the fact; a very considerable quantity of corn in the form of nubbins was found when it was cut, but the amount I had no means of judging, as circumstances prevented me from ascertaining it, as well as the amount of dry fodder after it was cured. I hope some one will repeat the experiment next year, and send you the result. I think if soiling of cattle is ever made available in this country, it will be from the employment of corn in this manner; at any rate, more cattle can be supported and kept in good condition through the summer in this way than any other.

Yours,

J. SULLIVANT.

THE OLDEN TIMES.

At a meeting of the Gateshead Mechanics' Institute lately, Mr. Butt, M. P. dilated on the folly of sighing for the return of ancient customs. Queen Elizabeth was the leader of fashion in her day, "but with all this, she fastened on her lighter garments, not with pins, but with wooden skewers—she breakfasted on salt fish and beer, the royal fingers serving her at breakfast and all other meals, in the lieu of forks—which at that time were unknown in England. The most comfortable parts in her palace were strewed, not with carpets, but with dried rushes and dead leaves. When she moved abroad, the royal state could not supply her with a carriage to be compared with one of our Gateshead cabs; and she presented herself in the streets of London on days of grand procession, mounted on a pillion behind her Lord Chancellor, who bestrode a Flanders mare."

From the Albany Cultivator.

THE PURSUIT OF KNOWLEDGE UNDER DIFFICULTIES.

Messrs. Editors,—I place the above sentence at the head of my page, as the subject of the present letter. It is one which I have somewhere seen illustrated in a humorous manner that has often served to recall it to remembrance, and to provoke a smile, when otherwise the feeling excited might almost have been of a melancholy character. Within the past few years, or since my main object has been to promote the advancement of improved agriculture, the "pursuit of knowledge under difficulties" has frequently arrested my attention. It has been exemplified in the shape of some worthy farmer, old or young, who has turned away from his plough and team for awhile, and is toiling manfully to climb some steep scientific hill, or painfully striving to fathom an obscure valley of learning which has suddenly opened in his way. No toil in the field under the glowing heat of harvest, has ever exhausted the sturdy frame, as have these intellectual efforts and struggles; the venturesome agriculturist has left the region of facts and substantials, and has penetrated into a land where all is unknown; now half stifled by ammonia, with an occasional whiff of other highly nitrogenous bodies, he labors on toward, as he fancies, some glimpses of certainty, but just as he plants his foot firmly, is overwhelmed by a cloud of ashes in the form of inorganic manures. He plunges for relief into an open drain, but soon finds that he must submit to the compression of a pipe tile, and perhaps be employed in irrigation. His hair stands on end as he peruses even the names of the awful substances which are described as constituting what he has heretofore looked upon as simple turnips and potatoes, and his own respiration becomes impeded as he thinks of the combustion that is going on in the lungs, and the transformations in the stomachs of his friends and neighbors, after one of those hearty meals that he has so unthinkingly shared with them before.

But these are only a tithe of the diffi-

culties which beset the daring individual who strays away from the old track. He studies and perplexes himself over a theory or principle till he has become confident that he sees through it completely, and prepares to put it in practice; he is full of the subject, and even imparts his expected success to his incredulous acquaintances; but alas for his confidence, some other writer comes forth with his views upon the same topic, and very probably contradicts point blank all that the first one wrote, and leaving the unhappy farmer in a state of doubt and perplexity that is truly distressing. But perhaps he is a man not easily disheartened, and turns to some other taking theoretical proposition,—here he has at last found what must be correct, and now he is to reap the reward of his superior skill in opening this new way to wealth; unfortunately however, he very probably finds once more upon actual trial, that even scientific men are fallible; the crops that were to grow on a particular kind of food, most obstinately refuse to flourish at all; the chemically prepared fodder proves distasteful to the unscientific tastes of his animals, or if they do continue to eat, they utterly refuse to grow fat upon it, except at an expense which makes their old food cheap in comparison.

The unlucky martyr to science, or to pretended science, finally gives up in despair, and henceforth settles down into a most determined opponent of carbon, nitrogen, silica and potash; they may do for those who have opportunity to know what they really are, but for him they are a kind of phantoms conjured up by book writers, to haunt the repose of honest, straight forward farmers.

Our friend after all, however, has yet perhaps a species of lingering desire towards science; he has bolted once from the old course, and finds it hard to jog on in the beaten track as before. Suddenly he receives a new illumination—it is all clear now—the difficulty has been that he did not comprehend all of these scientific terms and explanations sufficiently well to know exactly what he was doing, and an agricultural school is therefore evidently the thing that is needed; here he is told, everything will be taught for nothing; the farmer will be a chemist, veterinary surgeon, physiologist, geologist, &c. all in a few weeks, and will be able to examine and investigate for himself without any foreign aid. These enemies with hard names, will at last be brought under the farmer's power; he need only go to this workshop of science, and he will be turned out in a few weeks completely armed at all points. He will have a full commission to torture Nature, and compel her answers to every question. He can return from his day's work, and in place of toasting apples and cracking nuts as of old, will cook his own soils over his own fire, and separate all of their parts just as easily as cut a turnip into slices. Farmers will meet together in the evening, not to talk as now, about the markets, but to compare the properties of their acids and alkalies, to speculate upon some new theories of vegetable physiology, and to wax warm in discussing the relative merits of phosphoric and sulphuric acids. The agricultural school is to be the grand panacea for all difficulties and complaints incident to the pursuit of agriculture; when it is established, we shall have no more poor crops, no more unthrifty animals, no more worn out land; the great problem of giving everybody everything, seems at length likely to meet with a solution. Thus our friend, whom we have followed through a portion of his trials, seems likely at last to arrive at a satisfactory end of his labors, and to have pursued knowledge through difficulties, until in his own estimation at least, he has fairly caught it.

For my own part, I am by no means certain that he has entirely succeeded,—that is in such a sense as he himself considers; my belief is that this school from which he hopes so much, will in its turn disappoint his expectations, as they have been so often disappointed before. He will find that even after he has graduated with all the honors, that crops will still go wrong, that manures will fail, and that he often meets with questions which all of his science is incompetent to answer; his very calves and pigs will propound puzzles of the most perplexing character, which neither his laboratory nor his books can solve.

But it will not answer to leave our friend in this condition. An interest in the object of his pursuit prompts us to offer, if possible, some alleviation to this final disappointment.

All must now see what I mean, when I speak of the farmer's "pursuit of knowledge under difficulties," and although the nature of his trials may provoke a smile, yet they are real, and in their consequences, moreover, are fraught with matter of deep import to the prosperity of our country. Since it is becoming popular to exalt sci-

ence in its applications to agriculture, this department has been seized upon by many incompetent men. Between those who are really scientific authorities and those who are not, the farmer cannot distinguish; sincerely desirous to learn, he commits himself blindly to the guidance of the nearest or first guide that is available, or that offers, and frequently suffers severely in consequence.

First a quack propounds to him a false but dazzling picture of success; then some misguided enthusiast carries him forward to still wilder plans, and if a man of sense and really good acquirements, ventures to contradict either, it is at the risk of losing his reputation and standing among those who look at him as only on a level with his ignorant opponents, and who consider all scientific, that bear the name or assume it.

The farmer is overwhelmed with new theories, each more valuable than all of its predecessors; now he is to use one kind of manure, and neglect all others; next he learns that this first is of no use, but that another is infallible; one writer says that open fields and deep ploughing are cardinal points in the rules of the good husbandman, but a second assures his reader that if he can shade his land enough he need care for little more. What is to be done? Every man of sense becomes, after a time, disgusted with these contradictions, and retires in utter despair of obtaining the knowledge which he really desires. The editors of our agricultural papers are not free from blame in this state of things; many of them publish, either from ignorance, or want of independence, every mass of crude notions that is sent them, and thus help to confuse, still more effectually, the plain seeker after truth.

And now they have seized upon the last hope of the farmer, the agricultural schools, and are doing everything that can be done to dishearten and discourage their true and rational friends. I have not done justice at all to the ludicrous and absurd plans that are proposed, and the expectations held forth to our agriculturists.

These schools instead of being as they should be, places where the simple truth might be taught without fear or favor by really competent men,—places where the farmers might learn the great principles of their profession without being confused and confounded by half a score of contradictory theories, are to make thoroughly scientific men of all that even put a head or a hand within their gates, and the farmer's boy in a few weeks, is to do what men with hard study cannot accomplish in less than years. I do trust that we are not, in addition to our present obstacles in the way of safe and certain progress, to be overrun with half educated chemists, mineralogists, and pretenders to science, as graduates from such schools. Better by far not have them at all, than on such a plan as will add to the many difficulties and perplexities which the earnest inquirer after knowledge is now obliged to encounter.

Yours truly,

JOHN P. NORTON.

Yale College, Jan. 27, 1851.

From the Louisville Journal.

THE GRAPE CULTURE.

We thank Mr. Clay, late *Charge D'Affaires* to Portugal, for the following correspondence. We have no doubt that the information relative to the culture of the vine will be valuable to many in this country:

LOUISVILLE, Jan. 8, 1851.

To the Editors of the Louisville Journal:

Gentlemen,—Whilst residing in Portugal, it struck me that I might be able to obtain information respecting the culture of the vine, so much attended to in that country, which might possibly be of some service to those of my fellow citizens who are directing their attention that way.—With that object, the following correspondence took place, which, as you are in the habit of devoting a portion of your journal to agricultural purposes, is very much at your service, should you think proper to publish it. Mr. Tinelli, the gentleman who answers my inquiries, had been, until recently, many years our Consul at Oporto, and, his tastes inclining him that way, he had every opportunity to be well informed upon the subject he treats of.

I am, very respectfully,
Your obedient servant,
JAMES B. CLAY.

—

LISBON, Dec. 5, 1849.

My Dear Sir,—The attention of my countrymen in some sections of the United States is beginning to be turned to the cultivation of the vine. Anxious to obtain, for their benefit, accurate information as to

its culture and the subsequent processes of wine-making in Portugal, as you reside in the immediate vicinity where the Port wine grape is so extensively grown, may I ask that you will procure for me answers to the following queries:

1st. What grape is it from which the Port wine is made?

2d. What is the character of the soil upon which it is grown?

3d. What is the mode of cultivation? that is, how are the vines first propagated and planted? At what age do they bear fruit? What is the process of cultivation before they bear, and what after, both winter and summer?

4th. How are the grapes gathered?

5th. What is the mode of extracting the juice?

6th. What are the processes of preparing the wine, from the extraction of the juice until it is fit to be sent to market?

I am, very truly,
Your obedient servant,
JAMES B. CLAY.

Lewis Tinelli, Esq. &c.

—

CONSULATE OF THE U. STATES,
Oporto, Dec. 12th, 1849.

My Dear Sir,—I am now in possession of the letter which you have done me the honor to address to me on the 2d instant, asking me to answer some queries in regard to the culture of grape vines, and the production of wine in the wine region of the Douro, which I shall now endeavor to do in the best manner consistent with my practical knowledge of the subject.

The wine, properly known by wine dealers as "Port wine," is only produced on a tract of land, comprising about twenty square leagues on the right border of the Douro, at a distance of from ten to twenty leagues from Oporto. The limits of that wine district are established by law and by the regulations of the Wine Company of the Douro.

Answer to the first query:—The best grapes raised on the Douro's bank are the following, viz: the white Muscatel and the white Malmsey, which make particular qualities of wine, known in commerce under the same names as the grapes. The Bastardo (red) produces a very delicate and rather sweet quality of wine, which is generally used to improve the less flavored qualities of wine. The Alrarilhas, the Toiriga, the Tinta, the Tamara, and the Arinto, (all red) come next above the best varieties of grapes from which the Port wine is made, although more than thirty varieties of grapes are raised in the wine region of the Douro.

2d. The soil upon which the best wine is raised is a mixture of schist, lime, and vegetable earth; the best exposure is the south-eastern.

3d. The vine is generally planted and propagated from cuttings, which are branches cut from old stocks of the vines, having about one foot of the old wood and two or three feet of the shoots of one year. If these cuttings be kept in water for about one month before planting, their growth will prove more sure and luxuriant. They are cut during the winter, when the vines are pruned and planted early in the spring, at the distance of about three feet apart each way, in trenches about fourteen inches deep and wide, into which some old rotten dung is thrown, and afterwards are to be covered with the earth from the surface of the soil. The cutting is afterward cut at a length as to leave only three buds out of the ground. In the following year, the three branches, sprouting from the three eyes left to the cutting, will also be cut, leaving three buds to each of them; the third year they will begin to yield. Another mode of propagating and even of improving the quality of the grapes is that commonly known and called by agriculturists *by layers*. Vines are always pruned during the winter, and great care is taken to cut off the old branches, and to leave three shoots of the last growth, which is also cut at about eight inches from the old stock; they are likewise hoed and weeded at least once in winter and once in summer. In June, when the vegetation of vines is in its greatest growth, a diligent farmer is always careful to cut with the fingers the smallest sprouts, which only serve to enfeeble the vegetation of the larger branches, and in many vineyards the good method has been also adopted to plant some sticks or even stocks of canes, to which they tie with straw, or young willows, the young luxuriant branches of the vines.

4th. In many parts of Europe the epoch of the vintage is every year determined by the municipal authorities. In the district of the Douro, the farmers are led to commence the gathering of the grapes by their own experience. The delicate flavor of the grape, and a kind of gluish adhesion to the fingers in handling the grapes, will easily apprise the farmer of their complete maturity.

5th. The grapes are always gathered on

a dry, sunny day, and after sunrise; they must be clean of all leaves, and of either rotten or green pits; they are brought in baskets to the press vat, where, after the vat is completely full, they are carefully pressed by men's feet. Twenty-four hours after this operation, the ebullition of the liquid will commence, which will bring up to the surface of the vat the stalks and skins of the grapes, and form a kind of crust. It will be well to break with some wooden instrument that crust, and to mix it again with the liquid four or five times during the fermentation, which will be prolonged by this operation, and thus the wine acquire more color and strength. The fermenting process will last five days in a good year, when the grapes are good and sound, but less, if the grapes be not very sound, or if they have been gathered in damp weather. After the fermentation is over, and before the liquid becomes completely cold, the wine is taken from the press vat to the wooden tunnel (cask.) The residuum, that is to say, the stalks and skins of the grapes, which still contain a good quantity of juice, are heavily pressed by the press of the vat, and the wine thus obtained is carried into another tunnel, being of inferior quality.

6th. A second fermentation of wine takes place a short time after it is put into the tunnels, so that it will be necessary to keep, during the process, always the bung hole open, to let part of the gas escape, and to avoid the explosion of the vessel. When this second fermentation is finished, and the liquid becomes cold, it is then considered ready to put into pipes and brought to market, but previous to this it must be well clarified with whites of eggs, proportionate to the quantity of the liquid, and about two per cent. of good old brandy is added to the wine.

It is known to the analysts that Port wine, in its primary and natural state, contains about twelve per cent. of alcohol, which quantity is far beyond what is contained in the strongest wines of France, Spain and Sicily. But, notwithstanding this natural affluence of spirit, by its peculiar idiosyncracy, Port wine, when intended to be preserved for many years, requires, almost every year, an addition of brandy, and to be moved from one vessel into another. A careful clarification and settling is also required before the wine is shipped, and more especially in a cold season.

There is a strong bodied, heavy colored and very sweet quality of artificial wine, called Geropiga, which is used by ill-advised or dishonest dealers to increase the body and strength of inferior wines. More than five hundred pipes of that stuff is yearly shipped to New York, under the rather ironical name of *pure juice*, which are quickly sold to a certain class of merchants, who mix that liquid with common Catalonia, Calabria, and even low French wines. The real Geropiga is made by boiling the pure juice of the grape until reduced to two-thirds of its volume, to which a certain quantity of sugar is also added, and one-third of good brandy; but in many instances, to give a deeper color to this stuff, large quantities of elder berries, and of other more obnoxious material, are mixed with the liquid.

I beg to reiterate to your Excellency the assurance of the highest consideration, with which I have the honor to be

Your obedient servant,

L. W. TINELLI.

His Excellency, James B. Clay, Charge D'Affaires, &c.

From the Germantown Telegraph.

THE PUMPKIN—ITS CULTIVATION AND USE.

Mr. Editor,—The pumpkin, although a very common vegetable, has never, I think, been appreciated so highly as it deserves. This arises in part from the very injudicious, and in many instances, preposterous manner in which it is cultivated. From the great size and extent of the vines, and the weight of the fruit, common sense would induce us to infer, that the amount of nutriment required to bring it to perfection, must necessarily be proportionally great; yet we generally find it growing among corn, and not unfrequently on soils, the constitutional character of which is too weak to insure success to the lightest crops. The consequence of this species of "mixed husbandry" inevitably is, that neither the corn, when so grown, nor the pumpkins attain their maximum development, and both crops are garnered at an expense which often greatly exceeds their worth. Now, sir, Nature is always a fair dealer, but she will not be cheated. If we would realise good and remunerating crops, we must proceed on righteous principles; then, however liberal may be our demands, all our behests will be guerdoned with a fair equivalent in return. My method of cultivating the pumpkin is this:

In the autumn I break up a piece of well

conditioned sward land, roll and harrow. I then spread on after the rate of thirty cords of old manure to the acre, and turn it under with a light furrow. Four bushels of gypsum to the acre are next applied, the soil rolled smooth, and left in this condition till the subsequent spring. As soon as the frost is fairly out, and the soil sufficiently dry to admit of its being worked with facility, I take on the cultivator and give the surface a thorough working, following and dressing off with the harroow. My hills are then made six feet apart each way—a large broad hole being excavated to receive one bushel of old compost on which I plant my seed—from five to six of which are allowed to each hill. Over the seeds, and in immediate contact with them and the manure, I apply half a pint of gypsum and a little sulphuric acid or pulverized copperas, and cover with one inch of fine soil, pressing it down with the hoe.

As soon as the plants are up, I give them a dressing of ashes, about one pint to each hill, and hoe when in rough leaf. As the striped bug, which preys on the cucumber and squash vine, is also an equal enemy to the pumpkin, I spread over my plants in "*bug time*" a thin flake of cotton, fastening it down by means of wooden pins, which prevents their doing much injury to the plants, and often, when properly done, wholly prevents their attacks. As the vines extend, the benefit of the spread manure becomes regularly and progressively more obvious and apparent. From every joint of a pumpkin vine there emanates a system of small fibres which penetrate the soil and perform the functions of roots. They are, in fact, veritable roots, and when they fasten upon a soil or section of soil replete with *humus*, or the active elements of vegetable nutrition, they greatly assist in augmenting the thrift and fruitfulness of the vine. As every portion of my pumpkin plot is filled with organic matter, in a condition to be readily appropriated and assimilated by the organic action of the vegetable system, every fibre becomes a mouth for the reception of invigorating food, and every evolution of roots, an increase of vital strength in the parent plant. Great care is had to keep down the weeds, and thoroughly to eradicate every vestige of spurious vegetation before the development of the runners and foliage has become so exuberant as wholly to occupy the soil. In this way, vast crops of this useful and valuable production may be obtained at comparatively small expense.

For feeding swine, I prepare a few barrels of pumpkins annually, in the following manner: Selecting the earliest ripe, I cut them without paring into thin strips, and dry them thoroughly in the sun, by suspending the rings on poles and when dry pack them away for future use. Prepared in this way, pumpkins may be kept an age, and when ground, mixed with skimmed milk and sweetened with a little molasses, it constitutes one of the best and richest articles for winter feeding that can be supplied. A few handfuls of this meal will be found sufficient for a bucket full of mush, as it absorbs a large quantity of water, and "swells" much more than Indian meal, especially if it has been properly dried and preserved from wet.

A Practical Farmer.

Bald Eagle Farm, April 14, 1851.

From the Genesee Farmer.

GARDEN CULTURE.

There can be no such thing as complete, satisfactory success, in the culture of the orchard or the garden, with a poor, shallow, ill-prepared soil; and very few people who are not familiar with gardening, or who have had no opportunity of seeing good garden management, have a correct idea of what good garden culture is or ought to be. About this time of the year, in passing around the country, we find in the neighborhood of most farm houses a small plot of ground usually called the garden; but of all other places on the premises it looks decidedly the least like one—during the last three months grass and weeds have been allowed to grow unrestrained until they have completely covered everything, and are actually rearing their heads above the garden fence. It seems to be the settled opinion that such labor as hoeing and weeding, though well enough and perhaps necessary for the first three months of the season, while the crops are working their way through the ground, are quite superfluous in the autumn months. Some of the crops have been gathered, the others are nearly full grown; and what good could hoeing or weeding do? These weeds remain, therefore, and all dry stems, rubbish, &c. that have accumulated in the garden during the season, are left in heaps, so that field mice are attracted there to occupy themselves during winter, gnawing the

bark of the trees, if there be any. Next spring—say in the latter end of April, when the weather has become warm and pleasant, and birds are singing and trees preparing to expand their blossoms, the temptation to do a little gardening can no longer be resisted—something *must* be done; and what is it? Why, if manure be quite handy, a sprinkling is thrown over the surface, and the plough is introduced, a part of the ground scored up until it has a fresh surface; perhaps half the trees in the garden have been bruised or broken with the whiffle-trees, or the tops eaten off by the horses; but it could not be helped. This is, as near as we can describe it, the routine of gardening practised among a very large portion of our agriculturists, even in some of the oldest and wealthiest districts. We never ride a dozen miles in the country, in any direction, without coming upon many such gardens, the property of wealthy farmers, with large, well tilled, and profitable farms *paid for*, and money, more or less, let out on interest besides. The poor farmer who is struggling under a heavy debt, with small stock and small means every way, is excusable, if anybody be, for owning a garden of weeds, but for those who are in easy and even affluent circumstances there is no excuse whatever, and we always feel inclined, in passing their premises, to stop and lecture them a little on the subject; but, as that would not do, we take this means of bringing it to the attention of some of them at least.

We ask these farmers to take a look into some of the little gardens in the nearest village, and see what is going on there. At this season the ground will be as clean of weeds as in July; the crops will all be gathered; all the bean poles, pea sticks, &c., will be carefully put away; dry stems of plants, heaps of weeds and rubbish, will be snugly deposited where they ought to be, in the manure or compost heap, and preparation for another season, such as manuring and trenching, will be already in progress. A garden will be there next season worthy of looking at, and fruits and vegetables will be grown in it that will be the talk and wonder of the neighborhood.

We have spoken of trenching, and it might perhaps be well enough at this time and in this connection to give a brief description of what we mean by trenching. In the first place, the object of trenching is to *deepen the soil*, to enable the roots of plants to penetrate it, and to increase its capacity for retaining and furnishing the necessary food of plants that grow on it. A shallow soil, however rich it may be made with manure, is unfit for gardening. The roots of plants in it are kept near the surface, and always suffer in a time of drought. In dry, midsummer weather, the crops on a thin, untrenched soil will be completely scorched; their stems will droop, turn brown, and, if the drought should continue a month or six weeks, as is frequently the case, they die or become a total loss; while in a deep trenched garden, where the roots can penetrate freely in search of food and moisture, the drought is scarcely felt at all. Tap-rooted plants, such as beets, carrots, parsnips, &c. can only be grown smooth and fine for the table on a deep soil. The highest culture that can be given on a thin hard soil, will only produce knotty, forked, deformed things, neither fit to be seen nor eaten. There can be no good gardening without a good, mellow soil, fit for the roots of plants to enter to the depth of full eighteen inches—two feet would be still better. Very few people are fortunate enough to have a garden soil naturally fit for roots to this depth; hence the necessity for trenching.

The proper implement for trenching with is one that some how or other seems to be very unpopular, but one quite indispensable in the garden—the spade. A plot of ground is trenched by commencing on one side and opening a trench two feet wide, and as deep as you wish to make your soil—say two depths of a common spade. The earth taken out of this first trench or opening is carried on a cart or wheelbarrow to the rear of the plot where the trenching is to terminate. The first trench being opened, another space of two feet is marked off, and the surface spadeful of this thrown into the bottom of the trench. If manure be needed, a layer of manure is thrown on, and then the bottom spadeful is thrown on top of that. Where this second course is hard, bad soil, it should only be loosened up with the spade or pickaxe if necessary. To throw such earth on the surface would be ruinous to the ground for a year or two until it would be mellowed and enriched by amalgamation with the other soil and with manures.

Where a garden is new, or even large, the subsoil plough might be used, and will no doubt be much cheaper than the spade; but where a garden is small or encumbered

with trees the spade is the thing. If taken at the proper season, an ordinary sized garden may be trenched at very trifling expense. It may be done when nearly all other outdoor work upon land has ceased. We have kept trenching going on all winter, by covering the ground with leaves a few inches deep. There is no farmer but could find, if disposed, time enough with his men to prepare his garden in this way, and then when spring comes the labor of preparing and seeding would be comparatively light—it could be done much earlier in the season, and the crops would be of some value and creditable beside.

The manure used in gardens should be old and well decayed, so that it can be cut easily with a spade. You may then depend upon its not filling the gardens with weeds, as fresh manures always do. This trenching has a wonderful influence on the soil. We know little about it in this country. In Europe it is as common in garden, orchard, and vineyard culture as ploughing is here for grain crops. In the wine making districts of France and Germany, the soil has been made out of hard, gravelly, slaty hills, that in the natural state would appear about as fertile as the rocky banks of the Hudson. The beautiful and famous vineyards of Cincinnati occupy barren looking bluffs around the city, that have been trenched by Germans in their own style and brought into their present productive and polished state.

It is not dry, hard, thin soils alone that are benefited by trenching, but heavy, cold, and damp soils; loosening of the subsoil renders them porous, allows superfluous water to pass off, and warms and sweetens the ground. We recommend this subject to the immediate attention of all who have gardens; and, if any further information be desired on the subject, we will cheerfully impart it if we can. We are so fully convinced that this thorough preparation of ground is at the bottom of all good and successful gardening, and so fully aware, too, of the extent to which it is neglected, that we cannot press it too strongly.

FRENCH SHEEP DOGS.

An English traveller speaks of the dogs which are used in Normandy, in the management of sheep, as being uncommonly valuable. He thus describes one: "The animal was some cross of the breed commonly known in England as lurchers; and the quick sparkle of the eye, and the ready and eager intelligence of his face as he watched his master, and flew round and round the flock at the slightest gesture, or merely mumbled word of direction, were really beautiful to see. The shepherd told me he was a most valuable dog—he would not sell him for two hundred francs."

From the Genesee Farmer.

ON FATTENING DOMESTIC ANIMALS.

In an admirable lecure before the Society of Arts, Mr. Mechi, of England, says: "I believe it is the great quantity of stock kept that enables the Lothian farmer to compete at so great a distance with the south-country farmer; and I believe it is the still greater quantity of stock kept by Mr. McCulloch, of Auchness, that enabled him to surpass the Lothian farmers. Mr. Lawes has shown most indisputably, in his admirable papers in the Royal Agricultural Society's Journals, that we can produce manure cheaper and better by feeding stock than by purchasing guano."

The economical production of beef, pork, and mutton, and thereby securing a large increase of manure, is an object of the first importance on every well managed farm. A great many cultivators in this country have yet to learn that it is quite as easy to consume and finally exhaust the fertilizing elements in the subsoil, by deep tillage and selling all the crops, as it is to impoverish the surface soil by shallow plowing and sending the cream of the land to distant markets. Both practices are part and parcel of the same unwise system of agriculture. Each cubic foot of the reader's soil will weigh 100 pounds on an average—some more, some less—exclusive of water or moisture. If it contains one part in 1600 of potash, it is better in that regard than the average of land twenty-five years in cultivation. As there are 1600 ounces in 100 pounds, of course a fair soil contains but an ounce of potash in a cubic foot; and of this not over a drachm, or the eighth of an ounce, is available for any one crop, or perhaps for any five, owing to the circumstance that seven-eighths of this alkali exists in the same condition in the earth that potash, soda, and lime occupy in window-glass, *i. e.* it exists in the shape of an insoluble

silicate of potash. Now, it matters not what food is fed to animals, very little of the potash, and less of the soluble silica taken out of the soil in such food, remains in the system. These, and other earthly elements of crops, appear in the droppings or excretæ, and can be restored to the ground whence they were extracted. But if a drachm of potash is sent to market in hay, potatoes, grain, or other products, from each cubic foot of soil, or if it be wasted at home, how is the farmer to replace that quantity of alkali in every cubic foot of his impoverished fields? Very few of our readers have any just appreciation of the intrinsic value of the raw material of human food and raiment.

Mr. Mechi says that a million tons of oil-cake are imported into England every year; and in a recent debate in Parliament, on the question of allowing the out-going tenant a fair compensation for unexpended manure applied to land, it was decided by a vote of the House, that the manure made from a ton of oil-cake is worth half the cost of the cake. A motion to regard the manure made by grain at half the cost of the grain, was first carried, then re-considered and lost. We should have voted in the affirmative on both of the above questions—denying the right of any tenant or landlord to remove more of the earthy elements of bread and meat from the soil than he applied to it. The natural fruitfulness of the earth, whether the estate be entailed or not, belongs to no one generation exclusively; therefore, to rob the earth of its phosphorus, potash, magnesia, soda, and chlorine, is an obvious wrong which can be justified only on the ground of an immediate and pressing necessity.

It is now the great business of American canals, railroads, river, lake, and foreign commerce, to convey to distant markets the raw material of cotton, grain, and provisions, drawn from one hundred million acres of virgin soil. When our turn comes to seek a million tons of oil-cake worth $15 a ton for manure, where shall we find it? So long as our subsoils abound in the elements of wheat and cotton, deep ploughing, subsoiling, and growing clover, will bring them to the surface; but after the bone-earth and potash are finally consumed in staples sent to the seaboard, or are dissolved by tillage and washed into the creeks, rivers, and lakes—*what then?* Then, and we fear not before, we shall begin to fatten neat cattle, hogs, and sheep, in a way to save every particle of their droppings, by feeding them on open floors with a tight basement.

Speaking of this open-floor and cellar arrangement, Mr. Mechi remarks: "Experience has taught me, and will teach others, in order to succeed in farming, we must produce a much larger quantity of meat on our farms than at present, and at less cost. In order to do this, it becomes necessary to consume a large portion of the straw of the farm, cut into chaff, and *cook it with meal and ground oil-cake.* We are thus deprived of the usual cattle-bedding, and must find a substitute. Having practised the system rather extensively, I will communicate to you the details; observing that although attended, as every system must be, with certain disadvantages, the balance of benefit is sufficiently considerable to induce me to continue and extend it. The quantity of stock I now have on boards (slats) is, 100 lambs, 50 sheep, 60 calves, 30 bullocks, 10 cows and 200 pigs. I measured the hoofs of the various animals, and arranged my openings accordingly. For bullocks, the space between the slats or boards is $1\frac{7}{8}$ inches; sheep, $1\frac{1}{4}$ inches; pigs, ditto; small pigs and lambs, 1 inch; calves $1\frac{5}{8}$ inches.

"One cannot too highly appreciate the system on heavy lands, where animals cannot be profitably folded during winter. The area allowed to each animal and its feeding apparatus, is thus:

	Superficial feet.
Small sheep,	8
Large do.	10
Small bullucks,	30 to 40
Large do.	50 to 60
Small pigs,	6 to 8
Large do.	9 to 11

"Very much depends on the season and weather. In cold weather, pigs and bullocks can scarcely be packed too close, so long as there is room for them to lie down comfortably. Sheep require a little more room and ventilation. In fact it requires a nice observation to adjust the ventilation and temperature. This is best done by a thermometer, because our own feelings are not always a sufficient criterion. Every cattle shed should feel as comfortable and warm as a drawing room. The opening for ventilation should be at the highest point. My bullocks are groomed daily by a boy, whose sole occupation it is. The cost is about one farthing a head per

week, and I am sure it pays. [Pays the owner of the cattle, but not the boy.] Before I leave the open boards, I should say that the bars or planks may be either of straight yellow deals [pine] or straight-grained hard wood. The latter are to be preferred for heavy animals, as they wear off the edges of deals. I should say that we never sweep the floor; but the animals are perfectly clean. Of course the manure is taken out at once to the field, without the interventional expense of a double carting, shooting, or turning over a dung heap. The effect on the crops is unmistakable. I am quite sure the system is very advantageous. It is true we like a soft bed, and so do animals; but our medical advisers recommend a hard one.

"There is a powerful development of muscles on boards—so much so, that with fattening pigs not bred on boards, I have found some of them get capped hocks. It is surprising how fast you may fatten your pigs on these floors. They find it inconvenient to run about, so divide their time between eating and sleeping—a most agreeable operation for the account book. My old bailiff admits that, on the turning-out system, two-thirds of my farm would be required to feed my animals; now they make shift with one-third. If you desire a good appetite for your animals, turn them out in the cold for exercise. On asking the boy how they got on, he replied: 'Oh, sir, they get on properly well now, they come in so hungry.' This settled the question in my mind; but those who doubt the facts, can make experiments. There can be no doubt the animals are perfectly healthy on these boards. Considering the confinement and heat, this rather surprises me, especially with pigs fed entirely on meal; for the ammonia or effluvia from under them, is powerful enough to discolor paint. The great difficulty I find, is in getting a proper fixer of ammonia. I have used sulphuric acid, ashes, and various matters, with a certain effect. I hope the Irish peat charcoal will not be too dear; I have a ton coming on trial. After all, I am inclined to think common salt, or the common dried clay, is the cheapest fixer, and I have used a great deal."

Well dried and finely pulverized clay is one of the best and cheapest absorbents of the gases from the dung heap. In preparing nightsoil for transportation, the Chinese have used dry clay for unknown ages. To escape the attacks of flies, which in summer are very troublesome to cattle Mr. Mechi keeps his stables dark. He says, "if you have ten million of flies, no one will bite in the dark." Mr. M. has a steam engine for grinding coarse grain cutting straw and turnips, and steaming food.

Of course, if all farmers were to go extensively into the production of meat, the market would soon be overstocked and the article become valueless; but there is little danger of such a result. It is too easy to skin the soil, as immense herds of buffaloes are slaughtered for their hides and tongues alone, for many to engage in any system of farming which restores in manure as much of the elements of fertility as is removed in crops. To purchase oil-cake or guano enough to form 100 bushels of wheat or corn for every 100 sold off the farm, is a policy not soon to come into general favor in this country. But after the virgin earth has parted with the raw material for making bread and meat, to the depth of two feet, then we shall begin to consider the supreme folly of wasting fertilizers enough every year, as we now do to form one thousand million bushels of corn. This immense loss is not likely to be any less during the next twenty-five years; and it will tell most against the deepest tilled land, which now yields the best crops, provided their earthy elements are not restored to it. Unless it can be shown that each cubic foot of soil contains an unlimited quantity of BONES, or the material to form them, it is easy to see that, to be ever extracting phosphate of lime in grass, grain, roots, cotton, hemp, sugar-cane, and tobacco, and sending these products off the farm, must inevitably consume all the bone-earth in the soil, within the reach of any cultivated plants. Whatever minerals American soils lose by leaching and in crops, must some day be restored to it, if not from Great Britain, from the great deep, or some other source. We can no better afford to cultivate 100 acres to grow 1000 bushels of wheat, than the farmers of England can. Why, then, should we not attempt to increase our average crops to twice the quantity per acre now harvested? This can only be done by augmenting the fertility of wheat fields; and how can this be effected better than to pass grain, roots, and grass, through meat producing machinery—selling the meat, and adding the manure to the land that needs it?

The different results obtained by feed-

ing corn to hogs and neat cattle in different parts of the United States, are quite curious and instructive. We have before us a letter from Mr. J. E. Dodge, of Potosi, Grant county, Wisconsin, who says: "In October last, I selected from my stock two pigs of the same age, and apparently alike thrifty; one, however, weighed 260 lbs., and the other 247 lbs. Immediately after being weighed, they were put in different apartments in the same house, kept dry and warm, and fed with great care forty days, when they were weighed and slaughtered. The heaviest pig was fed with corn meal mixed stiff with cold water; the other with shelled corn, with a plenty of pure water to drink. The one fed with meal consumed 425 lbs., and gained 63 lbs. live weight; the pork weighed, after dressing, 267 lbs. The other ate 308 lbs. of corn, and was found to have gained only 33 lbs. in live weight; his pork weighed 231 lbs. By subtracting the pork weight from the live weight, the amount of offal is ascertained, which in this experiment proved a fraction less than one-fifth of the live weight. If one-fifth be deducted from the amount each pig gained, we then have the true gain in pork produced, which was 6¾ lbs. for every 56 lbs. of corn. The pigs were a cross between the Byefield and Berkshire—the best and most profitable breeds. The corn the yellow dent or Cleveland, a variety held here in great esteem."

We confess the above statements, the truth of which we have no reason to question, surprise us. The pig fed on dry corn gave only a pound of pork for 11½ lbs. of corn. Had this meat been made in Georgia, where corn is now selling at two cents a pound, or at $1.12 a bushel, it would have cost 23 cents a pound! Allowing the manure to have been one-fourth the price of the corn, (it is estimated at two prices,) and still the pork cost 17 cents a pound. The other pig did a little better on meal. His pork cost 8 lbs. 5 oz. of meal per lb., which is too much by half to have pork-making profitable. Mr. Henry Ellsworth, former Commissioner of Patents, produced pork at the rate of 100 lbs. of meat to 350 lbs. of corn *cooked;* but, about five to one is the relation that grain bears to the meat.

Eight thousand circular letters from the Patent office bave been sent into every county and parish in the Union, besides being published in a number of agricultural journals, containing the following among other questions: "How many pounds of beef will 100 lbs. of corn produce?" Most of the answers come from Ohio and Kentucky, and the quantity stated ranges from 10 to 20 lbs. of beef for 100 of corn; the average is about 16. If any reader of the Farmer has any facts in regard to feeding sheep or cattle, showing the yield of meat for a known quantity of food, we should be happy to receive them for publication. To produce food for man and food for plants in the most economical way, are the points aimed at.

ANALYSES OF THE PEACH TREE.

We extract from the Ohio Cultivator the following interesting analyses of the peach tree, by two distinguished chemists. It is from scientific investigations like these that much labor and capital can be saved to the agriculturist and horticulturist. By comparing the constituents of the soil with the wheat or other crop, the intelligent farmer can see wherein it is deficient in any of the elements required for the crop he wishes to grow.

Here we see all the proportional constituents necessary to the perfection of the peach crop, which, in some sections of the country, and especially in Eastern Virginia is of much importance.

"Having observed in a late number of the Ohio Cultivator an analysis of a seedling peach tree by Prof. Emmons, as well as my analysis of some cultivated kinds, and, there appearing to be considerable difference in comparing the two together, which might induce with some persons not thoroughly conversant with such subjects an opinion that there was some quackery in the case, I have thought it necessary to present a comparison of the two analyses in a different form, more intelligible.

Prof. Emmons, it will be seen, has separately analyzed the wood of limbs, bark of limbs, wood of root, bark of root, wood of trunk, and bark of trunk. But my analysis was of the smaller limbs only. At the same time, I chose the smaller limbs as most likely to contain the largest proportion of the most rare and valuable constituents, as the alkalies and phosphates. The plan of analyzing the different parts of the tree throughout is no doubt preferable to that of some part only, but an ana-

lysis of the whole tree would answer every purpose. I have brought the statements of both analyses into nearly the same form, by rejecting the carbonic acid, as an unimportant constituent of plants, as Prof. Emmons has done from his, adding into one sum the materials of one kind in every part of the plant:

Analysis of Professor Emmons.

Potash,	10.69
Soda,	6.72
Chloride of sodium,	1.25
Sulphuric acid,	6.43
Lime,	31.27
Magnesia,	6.28
Phos. of Perox. iron,	1.15
Phosphate of lime and magnesia,	23.72
Organic matter,	5.16
Insoluble silica and charcoal,	7.30
	99.96

Analysis of B. Kirtland.

Potash,	16.11
Soda,	2.57
Chloride of sodium,	.89
Sulphuric acid,	1.70
Lime,	31.97
Magnesia,	9.06
Phos. of Perox. iron,	2.80
Phosphate of lime,	27.90
Silica, sand, and charcoal,	5.98
Per. of manganese,	1.02
	100.00

I think it is quite probable that the articles in the above tables that are nearly related in their qualities, as the potash and soda, lime and magnesia, iron and manganese, sulphuric acid and phosphoric acid, may fill the place of each other in the composition of plants in cases where one or the other may be deficient in the soil that supplies them nutriment. Now the potash and soda added differ but little in the two tables—the chloride of sodium rather more—the sulphuric acid is more than three times the amount in the statement of Prof. Emmons of that of mine. Lime about the same. Magnesia nearly one-half more in my account than in that of Prof. Emmons. Phosphate of iron double. Phosphates of lime and magnesia not much different, so of the silica and charcoal. Prof. E. found five per cent. of organic matter, which I did not look for, as there is no such an article mentioned in the rules of analysis I have studied. I found one per cent. of manganese, which he did not. We took the most distant extremes in our choice of subjects for analysis. He selected a natural seedling tree of the slowest growth, poorest fruit, and wildest nature. I chose the most highly cultivated kinds, of the finest quality, vigorous growth in new land, a chesnut ridge, limestone soil, well manured, young trees of the highest vigor, good bearers of fruit—such trees with their large glossy leaves and bright colored twigs, stocky growth, differ as much from the slender growth pale color, and lusterless leaves and twigs of the natural, as the wild savage of the wood from the most refined and cultivated person in civilized life. So we may infer that, as the natural and cultivated peach differ so much in their external appearance and the excellence of their fruit, so we will find as much difference in their chemical constitution as our respective analyses would indicate. Nature employs more of the alkalies and phosphates in perfecting the seeds of fruits and grains than in their stalks. So likely in the fine fruits more of these constituents are employed than in the hardy wilding tree.

BILLIUS KIRTLAND.

Poland, Ohio, March 3, 1851.

From the Alabama Planter.

MANURE FOR COTTON.

The Haynesville Chronicle publishes an interesting letter from Gen. C. Robinson, of Lowndes county, upon the efficacy of Plaster of Paris as a manure for cotton. Other seeds than cotton treated in the same way would no doubt show the like result. Gen. Robinson is a successful planter and every reliance may be placed in his statement as to the results of his experiments. We publish the letter below for the benefit of gardeners and farmers as well as planters:

J. M. BOLLING, ESQ.—*Dear Sir,*—Yours of the 25th ult., making inquiries respecting the use of Plaster of Paris, was received to-day. I will give you with pleasure all the information I have, which, however, is not a great deal.

I made an experiment in 1848 with plaster, by planting alternate rows, with cotton seed in their natural state, and with seed rolled in plaster. My object in thus

planting it, was to make a fair trial, by using the same soil, and thus to test its virtue as a manure. My notion was, that the plaster would act as a stimulant, and push the young cotton forward; and thus to better enable it to withstand the ravages of the insect, or lice, that annually prey upon it. I did not expect to realize any greater benefit; but I was agreeably disappointed. As soon as the cotton came up, there was a marked difference in the appearance of the rows. The seed that was rolled in plaster came up, growing vigorously, looking healthy, having a deep green color, and the appearance of the young in fresh, rich soil. Those that were not rolled in Plaster had the usual appearance of young cotton plants on old, thin land. The difference in appearance was maintained till the cotton ceased to grow; and was so great in the size of the weed, that it was apparent to any one passing by the field. The rolled seed produced weed from $\frac{1}{4}$ to $\frac{3}{4}$ larger than the other; and in picking out the cotton, a yield was obtained of full 50 per cent. in its favor. This seems incredible; but it is a fact which can be attested by A. T. May, who was attending to my business when the experiment was made, and who carefully weighed the cotton, and noted the result in his memorandum book.

Last year I used plaster on nearly the whole of my crop; and at one time I had the finest cotton I ever recollect to have seen in any field. My mode of treating it, is simply by rubbing the seed in it, as they are in ashes or dirt; and one barrel is sufficient for five acres of land. A little water is used to make it adhere to the seed.

I doubt its good effects on lime lands; but in a recent article I have seen on the subject, in some agricultural work, it is said to be beneficial in that kind of soil also. I am entirely satisfied of its being, on all sandy soils, a powerful assistant, and will well reward the planter, by increasing the crop of cotton or corn.

Plaster is worth here from $2 25 to $2 50 per barrel. I sent up last week 100 barrels to my plantation, which is pretty good evidence of my faith in it as a manure. Many planters are making a trial of it, and orders for it are received almost every day.

C. Robinson.

Mobile, March 1, 1851.

For the Southern Planter.

HORTICULTURAL REMARKS FOR MAY, 1851.

PREPARED BY A. D. ABERNETHY, FLORIST, GRACE STREET, RICHMOND, VIRGINIA.

Greenhouse plants should now be moved out of doors, and at this season should be particularly examined, as they will generally require shifting; they will also be more exposed to wind than they were in the greenhouse, and should consequently be tied to new stakes to save them from injury.

Those in small pots should be plunged about half the depth of the pot in sand, tan-bark, or some other substance to keep the roots moist, as plants in small pots are very liable to injury from drought in the course of a day's sun during summer. The cactus tribe is an exception to the above rule, being frequently destroyed by heavy or long continued rains when exposed, and are therefore retained in the greenhouse, giving, of course, plenty of air. Annual flower seeds will now be coming up; let them be carefully weeded, and where they are too thick, as they generally are, may be thinned out and planted elsewhere, choosing an evening or moist weather for this purpose.—Dahlias, carnations, as well as any other plants which may require it, should now be carefully tied to stakes.

Mow grass lawns, and destroy all weeds as they show themselves.

In the kitchen garden plant out cabbages for a succession crop. Sow also a few raddishes. Sow flat Dutch, drumhead, or other late cabbage, as a fall crop for winter use.—Weed and thin out all young vegetable crops which have been sown this spring.

GREAT VALUE OF GUANO.

In proof of this, Captain Buller, of the English navy, lately made the following communication to the Royal Agricultural Society:—He instanced the example of a farm in his own hands, consisting of eighty acres of poor land, for the most part lately reclaimed from heath, and rented at six shillings per acre.—For six years past, the whole of the grain and hay together, with about eighty tons a year of mangold wurtzel, carrots, or potatoes had been removed from this ground, and not a particle of any kind of manure restored or used, except guano and a little marl applied to the lightest ground, and ten loads of dung per acre, applied in one of the six years to three acres of potatoes. The white turnips have always fed upon the ground; but everything else has been taken to a barn two miles distant. During the whole of these six years, the crops

upon this land have been steadily increasing. Land, which six years ago, was not of itself capable of producing ten bushels of barley per acre, will now produce from thirty to forty.—Captain Buller stated that he applied guano to all the root crops, at the rate of about five cwt. per acre, for mangold wurtzel, or carrots, which were to be taken off, and at the rate of three cwt. for white turnips. That he took five crops in four years, and that he considered he had grown this year one hundred and forty tons of mangold wurtzel and carrots from seven acres of land.—*American Agriculturist.*

For the Southern Planter.

HIGHLAND MEADOW OATS.

Sir,—Your correspondent, "Joel Younger," in the April number of the Planter, inquires "who is using highland meadow oats?" My father sowed, some ten or twelve years ago, on the farm now owned by me, a small *patch*, say two acres, which has ever since produced a good crop of grass annually. I consider it one of our most valuable grasses. Last year, after grazing hard, late and early, I cut from my *patch* about one and a half tons of fine hay per acre. It has been top-dressed lightly once or perhaps twice in the last ten years, but the lot was made rich before sowing: soil a stiff gray. It goes frequently by the name of "Peruvian oat," and horses and cattle are as fond of it as the best timothy or herdsgrass. I intend to sow a field of it this fall, and can supply some seed to any one in want of them.

Respectfully,

RICHARD HILL, JR.

Ashfield, near Richmond, May 5, 1851.

CORRECTIONS.

We have been requested to correct some errors which occurred in reporting the *Conversation* of the Farmers' State Club. Mr. Edmunds was reported as saying, that limestone was every where in the county of Halifax. The remark was made by some other gentleman and applied to some other county. There is no limestone in Halifax known to Mr. Edmunds. The wire sieve to carry off straw from the beater is not used generally in the county of Halifax. It is described as an important improvement attached to the threhsing machine. The spiked beater is in general use.

If you mean to be happy when you are old, be temperate and industrious when you are young.

TO CORRESPONDENTS.

The communications of Mr. John P. Bolling on the "Use of Guano,"—and of Mr. Jas. Chowning on the "Castration of Colts"—were received too late for insertion in this number. They, with other favors, will appear in our next.

BEST TIME FOR CUTTING HICKORY TIMBER.

Permit me to mention a fact in relation to cutting hickory timber for farm or other uses. Three or four years ago, I was told by a very old man, (who is famous for his forks, rakes, &c., made of hickory,) that if I would cut the wood upon the 4th, 5th, and 6th days after the new moon, in August, that he would warrant it not to be destroyed by the worm nor borers. The result for several years has verified the old man's prediction, whilst that cut through the winter and at all other times through the summer, and not barked, (as a trial,) has been eaten throughout. Not being a lunarian, I endeavored to account for its preservation to the old man, by stating that the hickory, at that particular time, was in the chrysalis state, and therefore incapable of depositing the egg, &c.; but this he looks upon as rank heresy.

A VIRGINIA FARMER.

HORSE SHOEING.

The following exceedingly sensible remarks are from the pen of Mr. Miles, Veterinary Surgeon to the Queen of England's Life Guards and author of several valuable veterinary works. We commend them most particularly to the notice of every person who has that valuable, and almost indispensable animal, the horse, in charge. That class of persons very justly characterized by Surgeon Miles, as "asinine smiths," are invited to give their attention.

"The shoes of the horse should be of equal thickness throughout, with a flat ground surface, as those with high heels, which asinine smiths make in imitation of their own, are dangerously absurd. The toe, which ought to be raised, is thus low-

ered, and nature's plan reversed, which elevates the point in order to avoid obstructions. The web should be wide, and of the same width throughout, instead of being pinched in, because the Vulcan operator likes to see the shoe well set off at the heels. This is both unphilosophical and detrimental; it deceives the eye of man, and injures the foot of the horse. The *outer* edge of the foot rests on the inner edge of the shoe, and the remaining width of the web projects beyond the hoof; so that the master who thinks his horse has a good open foot, only has to be proud of a bad open shoe, which both conceals deformities underneath, and invites with open arms a bad road to come and do its worst. The heels are made bare just where the navicular joint is most exposed; and if that be inflamed, what must the agony be when the unprotected foot treads on a sharp flint? The horse falls suddenly lame, or drops as if he had been shot—phrases in much too common use to require explanation; and small is the pity which the suffering animal meets with from man, who having first destroyed the use of his victim's feet, abuses him because he cannot go; and imputes grogginess to him as a crime, as if he were in liquor like a groom, and not in agony.',

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COST OF HOGS AT LARGE.

A writer in the Davenport Gazette discusses the relative cost of feeding swine in confinement and running at large.

Take a hog that has run out all summer, and confine it in a pen to fatten and it will take at least 20 bushels of corn to make it weigh 200 pounds, whereas a hog that is shut up all the time, can be fatted with 10 bushels.

Hogs running at large are always in mischief. I am satisfied that, for the last five years. there has been more destroyed by hogs than all the exports would amount to of pork from Scott county for the same length of time.

You have to feed a hog that runs out about the same as one shut up, consequently you would save 10 bushels of corn on every hog you raise, by keeping them confined—this is worth $2 00. You will also save your fences. Wire fence to turn cattle can be built for fifty cents per rod that will last 20 years, but it is difficult to make a wire fence to turn hogs.

FARM MANURES AND THEIR MANAGEMENT.

We were, from the press of other matter, prevented from pursuing in our last issue the subject of manures and their management, as promised in the March number. Indeed, we might now postpone our own thoughts, accompanied as they are with valuable extracts from distinguished authors, to make room for much interesting matter furnished by our esteemed correspondents through the State. We hope the importance of the subject will be received as an ample apology for again bringing it to the attention of the farming community. We repeat, as we have often times done before, that there is not a farmer in the whole land—no matter how poor his land or few his acres, who might not make two loads of manures under a good management, where he now makes one; not only might he double his quantity, but, by very little extra trouble, with a moderate share of system, he might greatly improve its quality. While we have oft and again pressed on our readers the importance, aye, the necessity of increasing the quantity of their manures, yet we are not, and have not been unmindful of the fact, that one load of manure, rich in all its fertilizing qualities, is worth three of your mean, poor, dried up stuff, which is hardly worth hauling to the fields. Some of our readers, we fear, may carry our teachings about increasing the quantity of manures to an extreme; satisfying themselves that they have done wonders in manuring more land than they ever did before, neglecting, however, to note that the quality is in no wise superior, but possibly inferior to their products of former years. To increase the bulk of your manure heap is desirable; when you have accomplished this, you have done much, but you have not done enough—the remaining part of your work is of no less, indeed it is of greater importance, *i. e.* to make richer these heaps, which are to contribute to the filling of your barns.

The influence and effects of the sun, winds and rains upon open or uncovered farm pens have so often been shewn, that we think it an useless task further to discuss them. We need no aid from the theories of science, nor from the experiments of chemists to satisfy us that manures, of any sort, which are subjected

to the frequent alternations of our climate, must necessarily lose a great deal of their fertilizing ingredients—and yet, our cattle yards are exposed to the free and unimpeded action, not only of the rain which falls legitimately over it, but they are constructed, purposely it almost seems, in such a manner as to receive all the water, which can, with any sort of convenience, be brought to bear upon them. You rarely, if ever, see gutters to any of the farm houses, to carry off the water from the barn yard. The consequence is, that after every hard rain, your barn yards are perfect quags—your horses and cattle in passing over them, wading up to their hocks—then comes the scorching sun and drying winds, bleaching every thing before them. Thus you go on—today in a mire, tomorrow evaporated to the dryness of dust; and yet, you call this manure; and if perchance, you have a few more loads of this miserable stuff than usual, with which you dress a few more acres than your habit was, you glorify yourselves, good easy souls, and cheat yourselves with the miserable delusion that you are in an improving condition, while in reality you are "in a weaving way."

If it were impossible for you to avoid this great loss; if there were no means at hand, by which you might obviate, in a great measure at least, the injury of which we are speaking, there might be room for excuse; but as it is, nothing palliating or excusatory can be said in your behalf. You are guilty, guilty of great folly, and your guilt is by no means lessened by its causes. We must tell you the truth, unpalatable it may be, but we trust good may come from it. You are lazy, you don't love trouble, you dislike systematic rules and regulations, because they draw too much on your time and attention. We do not mean that you do not work—you do, we are satisfied; but it is in "the road our fathers went"—the beaten track you tread, moving neither to the right nor left. It is easy to travel the path used for years; but when a new way is opened you *hesitate* to enter on it, you *decline*. You allow the teachings of science, the results of experiments, if ever they are brought to your attention, to fall on a listless ear. Let us entreat you to awake from your slumbers; shake off your lethargy, and use the means, which are in your power, to improve your lands. Gain knowledge and make proper application thereof. Work by rule; do all that you do *well*, and your labour shall not be in vain. Rich rewards will be received for your troubles and vexations; your coffers will be filled; your barns groan with their rich fruits; your fields will smile with gladness, and your cattle laugh for joy. Your homes will not then be deserted for the prairies of the West nor the mines of California; but your *penates* will remain in the land of your fathers, and you shall dwell under your own vines and fig trees in peace, plenty and happiness.

We beg to direct the attention of our readers to the following extracts, hoping sincerely that they will receive benefit therefrom:

"*No putrefactive process ought to be suffered to proceed on a farmer's premises, without his adopting some mode to save, as far as possible, the gaseous products of such putrescence.*"

"These gaseous products constitute important elements of vegetable food, and a farmer may as well suffer his cattle to stray from his stall, or his swine from his sty, without a possibility of reclaiming them, as permit the principles of fertility expelled by fermentation or putrifaction to escape into the atmosphere for the purpose of poisoning the air, instead of feeding the plants. It is very easy to arrest these particles; a quantity of earth thrown over the matter, in which the fermentation is going on, will check its violence and arrest its gaseous products, which will be imbibed by the soil, and afterwards yielded to plants in such proportion as the wants of vegetation may require!"—*The Complete Farmer.*

John Young in his "Letters of Agricola" says:

"Fermentation, that destroyer of all organic conformation, is not to be feared by the farmer, if it be conducted and carried on in the presence of earth, which fixes and secures the gases as fast as they are liberated. Even the degree of the process is a matter of less consequence; because if the elementary principles are in keeping; and reserved for future usefulness, it is immaterial whether this has happened by a new absorption, or by still holding their original and unchanged form. In his composite hill (compost heap) the whole animal or vegetable structure may be dissolved and leave behind no trace of existence, without the least waste of the principles of fertility; because the ingredients superadded to the dung have become surcharged with them, or, to speak philosophically, fully saturated. We may go further, and state that complete decomposition is desirable in this case, which is so much to be avoided in the farm yard; because putrescent matter can only become vege-

table food by its resolution into primary parts, and if this be effected by any preparatory step, the young crop receives the full and instantaneous benefit. The compost manure is carried to the field ready to give out its richness on the very first call, and to supply the nascent radicle (young root) with a copious share of nourishment.

"The putrefactive process may be carried on in the presence of pure earth only, or of earth intermingled with fibrous roots, or lastly in the presence of peat, which is an assemblage of inert vegetable matter, and compost dung hills may be formed according to this threefold method.

"The simplest of all composts is a mixture of barn yard dung and surface mould taken from a field under regular culture. The proportions between the ingredients are fixed by no determinate laws, and consequently great liberty is allowable to the operator. I have known some instances where two cart loads of dung were used for one of earth; others, where they were blended in equal quantities; and it is not unfrequent to compound one of earth with two of dung. In fact, such is the uncertainty in the composition, that always every farmer adopts one peculiar to himself, and with equal success. No man need therefore follow implicitly the rules which have been laid down in this department of rural economy; but may vary and multiply his experiments, according to the suggestions of fancy or the dictates of convenience. If we slightly glance at the principle, we shall see the cause of this seemingly endless variety in the combination of the ingredients. The only use of intermixing the soil with the dung is to imbibe the gaseous elements of vegetable life, and hinder their dissipation. If there be much soil, these elements will be diffused through it with less density and compression; if little, it will be more abundantly saturated and enriched with nutritive vapors. The only error into which the farmer can run is, to supply such an inconsiderable quantity of soil as will be incapable of imbibing the elastic and volatile particles, and thus by his own mismanagement occasion a waste of the vegetable aliment. One cart-load of soil to two of stable dung is the least proportion which he should ever attempt to combine, and perhaps if the two were mixed equally, he would be compensated for the additional labor and expense.

"Simple earth, although excellent for bottoming and strewing over the pit dug near the barn, is of all materials the most unprofitable in compost dunghills. A matted sward, thickly entangled with roots, or mud dragged from the bottom of bogs and ditches, and replete with aquatic plants, are clearly preferable on this account, that, besides bringing earth to the composition, they supply a large proportion of vegetable matter."

Water, impregnated with certain salts and gases, particularly such as are evolved during the fermentation and decomposition of vegetable and animal substances, becomes what is called *liquid manure.* Urine is water holding in solution certain salts and other substances, which are the *essence of manure*, or the food of plants in a concentrated state.

Agricola, in commenting on a letter from Charles Alexander, of Scotland, to Sir John Sinclair, says:

"This intelligent farmer has long been impressed with the great importance of the urine of cattle as a manure, and he set about to discover, by a long and well conducted series of experiments, the best method of collecting and applying it. He began by digging a pit contiguous to the feeding stall, but distinct altogether from that which was appropriated for the reception of the dung. The dimensions of this pit were thirty-six feet square and four feet deep, surrounded on all sides by a wall; and the solid contents were one hundred and ninety-two yards. Having selected the nearest spot where he could find loamy earth, and this he always took from the surface of some field under cultivation, he proceeded to fill it; and found that with three men and two horses, he could easily accomplish twenty-eight cubic yards per day; and the whole expense of transporting the earth did not exceed twenty-two dollars. When the work was complete, he levelled the surface of the heap in a line with the sewer which conducted the urine from the interior of the building, on purpose that it might be distributed with regularity, and might saturate the whole from top to bottom. The quantity conveyed to it, he estimaed at about eight hundred gallons. The urine was supplied by fourteen cattle, kept there for five months on fodder and turnips. The contents of the pit produced two hundred and eighty-eight loads, allowing two cubic yards to be taken out in three carts; and he spread forty of these on each acre, so that this urine in five months, produced a compost sufficient for the fertilization of seven acres of land. He states farther, that he had tried this experiment for ten months, and had indiscriminately used in the same field either the rotten cow dung or the saturated earth; and in all stages of the crop, he had never been able to find any perceptible difference.

"It appears, then, that in five months each cow discharges urine which, when absorbed by loam, furnishes manure of the richest quality and most durable effects for half an acre of ground. The dung pit, which contained all the excrementitious matter of the fourteen cattle, as well as the litter employed in bedding them, and which was kept separate for the purpose of the experiment, only furnished during the same period, two hundred and forty loads, and these, at the same rate, could only manure six acres. The aggregate value of

the urine, therefore, when compared with that of dung, was in the ratio of seven to six."

In connection with this subject, we insert the following tables, which will be of interest to our readers:

"The solid and fluid excrements of animals form a very complicated mixture, as may be seen from the following enumeration by Sprengel; but this renders them the more valuable a manure for vegetables. They contain these substances:

1. Vegetable or woody fibre.
2. Wax and Resin.
3. Chloropole, or the queen substance of leaves, partly decomposed.
4. Deposited humus.
5. A fatty and oily substance.
6. Mucus.
7. A peculiar brown coloring matter, in the solid excrement of oxen.
8. Vegetable albumen, (hardened.)
9. Animal gelatine.
10. Animal fibre.
11. Salivery matter.
12. Ozmazome, } Originating in the urinary passages.
13. Hippuric acid, }
14. Uric acid, }
15. Lactic acid, }
16. Benzoic acid, }
17. Urea, }
18. Bilious matter.
19. Bilious resin.
20. Picromel.
21. Oxides of iron and manganese, derived from vegetables.
22. Earths, silica, lime, alumina, magnesia.
23. Salts, consisting of mineral acids and bases, derived from plants and water.
24. Common salt.
25. Carburetted hydrogen, } Products of the
26. Phosporetted hydrogen, } fermentation &
27. Sulphuretted hydrogen, } putrifaction of
28. Ammonia, } food in the bo-
29. Hydrogen, } dies of animals.

Numerous as these substances are, it is M. Sprengel's opinion that many more might be discovered by carefully conducted chemical analyses.

The components of the urine of cows are:

	Fresh.	A month old.
Water, in 100,000 parts by weight,	92.624	95.442
Urea, along with some resinous color'd matter,	4.000	1.000
Albumen,	10	00
Mucus,	190	40
* Benzoic acid, (hippuric acid.)	90	250
* Lactic acid,	516	500
* Carbonic acid,	256	165
* Acetic acid,	000	1

* Combined with potash, soda, and ammonia forming salts.

Ammonia,	205	*487
Potash,	666	*664
Soda,	554	*554
†Sulphuric acid,	405	338
†Phosphoric acid,	70	26
†Chlorine,	272	272
Lime,	65	2
Magnesia,	36	22
Alumina,	2	0
Oxide of iron,	4	1
Oxide of manganese,	1	0
Silica,	36	5
Sulphuretted hydrogen,	00	1
Sediment, consisting of phosphate and carbonate of lime, and magnesia, alumina, silica, and oxide of iron, and manganese,	00	180
	100.000	100.000

Components of the urine of man:

Water,	933.0
Urea,	30.1
Uric acid,	1.0
Free lactic acid, lactate of ammonia, and animal matter not separable,	17.1
Mucus of the bladder,	0.3
Sulphate of potash,	3.7
Sulphate of soda,	3.2
Phosphate of soda,	2.9
Phosphate of ammonia,	1.6
Common salt,	4.5
Sal amoniac,	1.5
Phosphates of lime and magnesia, with a trace of silica, and fluoride of calcium,	1.1
	1000.0

Substance of the urine of the horse, shee and pig is, on an average, as follows:

	Horse.	Sheep.	Pig.
Extractive matter soluble in water,	20.28	3.40	1.27
Extractive matter soluble in alcohol,	21.88	33.30	3.93
Salts soluble in water,	21.70	19.57	8.78
Salts insoluble in water,	19.40	0.52	0.84
Urea,	10.40	12.62	2.85
Hippuric acid,	6.91	?	0.00
Mucus,	0.06	0.25	0.06
Water,	899.37	928.97	982.27
	1000.00	1000.00	1000.00

In the constituents which supply nitroge the urine of the ox is as rich as that of th horse, and much richer than that of the cow much of the nitrogen of whose food goes t form the curd of the milk.

The saline and mineral ingredients of th

* Occurring partly in an uncombined state.

† Combined with soda, lime and magnesia forming salts.

urine of the horse, ox, sheep and pig, consist of the following substances:

	Horse.	Ox.	Sheep.	Pig.
Carbonate of lime,	21.75	1.07	0.82	0.00
Carbonate magnesia,	11.23	6 93	0.46	0.00
Carbonate of potash,	33.12	77 28	0.00	12.1
Carbonate of soda,	15.16	0.00	42.25	0.00
Chloride of sodium,	6.27	0.30	32.01	53.1
Chloride of potassium,	0.00	0.00	12.00	little.
Sulphate of soda,	11.03	0.00	7.72	7.0
Sulphate of potash,	0.00	13.30	2.98	0.0
Phosphate of soda,	0.00	00.00	0.00	19.0
Phosphate of lime,	0.00	00.00	0.70	
Phosphate magnesia,	0 00	00.00	0.00	
Silica,	0.52	0 35	1.06	
Ox'd. of iron and loss,	0.79	0.77	0.00	8.8
	100.00	100.00	100.00	100.00

The conclusion arrived at by Prof. Johnston, in reference to the contents of this last table, is that "the fermenting urine of our domestic animals cannot afford phosphoric acid, which must be conveyed to the soil by the solid excrements."

The discovery made by Mr. Alexander is of the utmost importance to the farmer—if it be true that more manure may be had from the stale of cattle than from their dung and litter in the ratio of seven to six. Taking it for granted that his statement is correct, how much valuable manure is yearly lost to the agriculturist? By a little pains, it is seen, he may more than double the quantity of his stable manure. Fourteen cattle are a small number, (if you include calves and oxen,) and yet you perceive how much they contribute to the enriching of your fields. By like attention you may increase your manures by preserving the urine of your horses, hogs and sheep, soapsuds and the washings of the house and kitchen. Surely the farmer, who strives to improve his condition, will not grudge a little extra expense and labor to obtain double the usual quantity of the very richest manure.

binations of qualities which contribute to make up perfect animals.

A Catalogue containing the pedigrees of these animals will be ready for delivery at an early period, in which the terms of the sale will be particularly stated. A credit will be given from 6 to 18 months. Gentlemen are invited to examine the herd at their convenience.

GEO. VAIL.

Troy, New York, April 1st, 1851, 3t

CONTENTS OF NUMBER V.

COMMERCIAL RECORD.

WHOLESALE PRICES CURRENT,

Reported for the Southern Planter by

NANCE & GOOCH, COMMISSION MERCHANTS.

TOBACCO—Prices have been firm since our last report, with occasional slight fluctuation from day to day; upon the whole, we consider them higher than they were at that date, although extreme rates are the same. The inspections in Richmond during the month of April, when compared with the same month last year show a falling off of about nine hundred hogsheads. We quote Lugs $3 50 to $7 50. Middling Leaf $7 50 to $11. Fine $11 50 to $18 25. The crop received thus far, is poor and in bad order. Dry tobacco much wanted. We consider prices to-day of inferior grades, higher than they had been for the last two months. We would advise planters to prize their tobacco in dry keeping order; yet not so dry as to break in prizing, or prevent its opening freely.

FLOUR—Richmond Canal $4 37½. Scottsville $4 50.

WHEAT—None arriving.

CORN—63 to 65 cts. per bushel of 56 lbs.

OATS—45 to 50 cts. per bushel.

GUANO—Peruvian $50 per ton—Patagonian $40 per ton.

PLASTER—$5 to $5 25 per ton.

SALT—From the wharf $1 65.

Richmond, May 8th, 1851.